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Pulp and Paper Magazine

OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XVIX. GARDENVALE, P. Que., January 6th, 1921. No. 1

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J. NEWELL STEPHENSON, M.S., Editor.

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-:- EDITORIAL -:-

A NEW START.

1921 has begun. 1920 is a memory; perhaps of achievement, perhaps of disappointment. In either case, 1920 has gone, but what we are today is largely the result of what we thought and did then. Did we think of the other fellow, were we careful, did we do our best each day honestly and cheerfully ? Then 1921 will surely be a happy new year. If we were careless, thoughtless, negligent or grouchy, let us solemnly resolve to make a cleaner record in 1921.

WHILE CHILDREN STARVE.

While millions of children are actually starving in Europe and China, the pulp and paper makers will partake of their annual bountiful banquet in Montreal on the evening of the 20th January. Nobody will begrudge these more or less prosperous people the opportunity of gathering in good fellowship about a well laden board. It is the happiest occasion of the year and there is certainly no shortage of food in Canada to be considered. The unfortunate features of our prosperous condition is that we cannot readily share our material welfare with those who are actually in serious want. But though we cannot extend our hand in person to help and cheer, we can do it effectively by proxy through the Canadian Red Cross.

One of the most enjoyable and satisfying features of recent banquets has been the collection for some good cause. For several years the contribution went to the Tobacco Fund for the boys at the front; after that it went to work of the Khaki League at home. Will there be a collection this year, and where will it go? The most crying need (literally) is to feed the millions of children who are starving for want of food and freezing for lack of clothing so as to save as many as can be reached before they die. Perhaps the Canadian Pulp and Paper Association has already planned the complete program for the banquet. We hope there is time to provide an opportunity to give as well as to get. In past years, thousands of dollars were gladly given to provide smokes for the soldiers in a war which has left millions of irresponsible children absolutely without food, except as it is provided by the great relief organization left over from war time. The fact that Germany was responsible for the war does not relieve us from responsibility for the lives of innocent children threatened as the result thereof, insofar as we are able to help. Ten dollars will feed a child till the new harvest, assuming the people have strength enough to plant a crop. The British Empire War Relief will use our contribution, sent through the Canadian Red Cross, where it will do the most good.

The paper mills and individuals in the industry gave thousands of dollars to campaign for McGill University. Let them respond as generously to this greater call when Pipe-Major Gray and his Highlanders come round again. We have not described the heart-breaking scenes and conditions witnessed daily on the other side. It should be enough to say that children are hungry.

Come to the banquet with a big roll or a fat check and if you cannot be on hand to put your contribution in Friend Bothwell's hat, send your check to the Pulp and Paper Magazine — made out to "British Empire War Relief", and it will speedily be on its mission of mercy. Be a real Christian and "come across."

MILL MEN APPRECIATE TECHNICAL CONTROL.

One of the happiest results ot the work of members of the Technical Section, illustrating at the same time the underlying purpose of the Section and its appreciation by the mills is the vote recently taken at Iroquois Falls, Ont., by the skilled employees of the Abitibi Power and Paper Company. Other companies are working along similar lines, but we know of no instance where the practical men, the operators, have expressed themselves so distinctly in favor of the scientific control of mill work.

For several years the company employed chemists and engineers who have been quietly making tests, observations and deductions. Mill men, for a time, rather ridiculed the idea of measuring the quantity of white water and determining the amount of fibre in it, or keeping close records of grinder speeds, pressures and temperature: "sewer rats," they called the little crew that tried to find out the truth as to causes and quantities of lost fibre, the reasons for breaks on the machine, defective paper, etc. The practical man did not understand and so failed to appreciate the connection between a defective grinder stone, a batch of weak liquor or a hole in a wet machine wire and the company's payroll. Lack of understanding induces prejudice, but paper makers are usually thoughtful chaps and they finally saw that better and more uniform grinding and cooking meant better running on the machine, fewer breaks with less work and less broke with fewer complaints. They saw that knowledge, intelligence and research, applied in the form of scientific control, meant smoother and more efficient operation of the mill. It means that by doing his work **right** a man did his work **better** and **more easily**—and he could be proud of the result. No wonder, then, that when a vote was taken to ascertain the attitude of the men of Abitibi toward scientific control that their approval was unanimous.

But the men in the mill are not content with letting the men from the laboratory have a corner on the knowledge that makes scientific control possible and most effective. They appreciate that the opportunity and willingness to study is really the foundation of success. Successful men study; successful processes are the result of study. When the men of Abitibi were asked if they wanted classes in pulp and paper making the vote was unanimously in favor and fifty out of sixty-eight wanted to take a full course, desiring especially to understand what goes on in other departments. There is no independent department in a paper mill; one cannot operate without the other.

The efficient operation of modern machinery requires workmen of intelligence and some education along vocational lines based on the fundamentals of mathematics and elementary science. Whether the workmen in our industry qualify is in their own hands. The opportunity is being prepared and in some cases, as at Iroquois Falls, has been offered. Manager McInnis was right in saying that: "The future of this industry, is fewer men and better men, the men will have to be more skilled and the unskilled man will become of less and less importance."

This simply means that the practical man and the technical man must get together and keep the ball a-rolling. The appreciation of the need for co-operation between the mill and laboratory is a natural development and a full justification of the existence of the Technical Section. Realization of the fact that they can and should co-operate with and assist the technical man (who has long realized his need of the practical man) will gradually increase the attendance of mill men at the meetings. They will become associate members and the usefulness of the Technical Section will be greatly extended. The time to begin is January 19th and 20th, at the Ritz Carleton Hotel, in Montreal.

On another page is a short paragraph that tells a long story. Howard Smith Paper Mills, Ltd. has consistently been working to develop a real community spirit in the town of Crabtree Mills. The cordial co-operation of the employees, the town's people, and their spiritual advisers, has made possible the happy climax to the year's work in the Community Christmas Tree. Other paper makers are doing similar work, which shows what a force for good this industry is in Canada.

COBWEBS.

The course of new pulp mills ne'er runs smooth. Here is the Great Lakes Pulp & Paper Co. still worrying about a source of power.

Crabtree Mills is not the only pebble on the beach. The children of Iroquois Falls also had a Christmas play.

Too bad the Ottawa River can't co-operate better with the pulp and paper mills and give the power they need to operate at capacity.

Scientists have found that carbon dioxide, let loose among growing vegetables, greatly increases the yield; the increase in the case of potatoes was 180 per cent. Here is a chance for steam power plants to raise vegetables.

It is reported that New York printers are to get another increase in wages amounting to $5 a week. It looks as if employers in the printing trade might not be able, at that rate to buy paper to keep their printers at work.

The Great Southern Lumber Co. has kindly sent a photograph showing broadcast seeding of forest trees in Louisiana. Twelve men are seen, marching in extended order. We are glad to note this evidence of real forestery work in the South.

Edward Beck, who is in charge of the publicity work of the Canadian Pulp and Paper Association, has prepared a review of conditions and probabilities for increased production in the Canadian Industry which will be published in the next issue of the Pulp and Paper Magazine.

The taxes are coming; they are, they are. The Royal Trust Company of Montreal evidently saw the shadow that portends the advent and has prepared for distribution a booklet entitled "The Income Tax and the Individual". It is designed to help the individual avoid the heavy penalties automatically imposed by the law for inaccuracy or delay. The taxpayer must get his own forms and return them accurately made out, with at least a quarter of the tax, by April 30. Forms may be obtained from a post office, Inspector of taxation, or an office of the Royal Trust Company. The booklet tells how to calculate your tax.

The sapota tree is the "chewing gum tree." Chicle is the proper name of the life blood of this tree from which the gum is made. It grows in South America, Central America and Mexico. It produces a fruit called the sapodilla pear, and has a straight, clear timber trunk.

Fire Prevention in Pulpwood by Means of Artificial Fog

By F. J. HOXIE, Boston.

Note.—The interesting address on Fire Prevention in Log Piles, which Mr. Hoxie gave at the annual meeting of the Technical Section, C. P. and P. A. in January, 1919, was published in the Pulp & Paper Magazine at the time, and is available as a reprint.

These two papers will form the basis for the discussion of another phase of the subject at the Technical Section, meeting January 19 and 20 in Montreal.

A large log pile fire presents an exceptionally difficult problem in fire protection engineering, in that many times as much quick burning fuel is present in a concentrated mass as is found in any form of building in which fires are commonly fought. The absence of walls and the exposed position and height of the log pile cause ideal draft conditions, so that the rate of combustion is ultimately limited only by the velocity at which air for combustion can be supplied to the fire and the products of combustion can be carried away. This velocity increases with the decrease in gas density caused by the rising temperature of the fire and is commonly called "draft."

Water Supply.

Very few of the large log pile fires have been extinguished by hose streams until the fuel has been practically exhausted owing to the amount of heat set free by the enormous velocity of combustion, therefore such a fire makes a formidable exposure to buildings or other nearby log piles, much more formidable from the fact that a fire in a log pile of from five to ten thousand cords has in nearly every case, continued two days or more whatever the water supply available. To fight such a fire with any chance of success not only must there be available an exceptionally large amount of water per minute but the supply must have such a capacity that it can be maintained at maximum volume for several days. In case of several large piles where a fire in one exposes the others, a continuous supply of from 3,000 to 5,000 gallons per minute for a week may be required to take care of sparks as well as the drying action of the heat in order to prevent the fire from spreading from pile to pile. For this purpose, pumps supplied from a river or other large body of water with an auxiliary gravity supply or a gravity supply through ample mains from a large reservoir is about the only practical arrangement. An auxiliary gravity supply of one or two hundred gallons for maintaining pressure constantly for quick service and supplying spray nozzles can be used in conjunction with pumps but a practically inexhaustible supply is unquestionably necessary for effective service.

Calculations based on the constant and high velocity of heat generation in large log pile fires which are confirmed by the lack of success in extinguishing such fires indicate that at least twenty to thirty gallons of water per minute would be required to extinguish a large log pile when well under way. Such supplies are nowhere available at present, therefore, when subdivision is to be relied upon as the chief of defense and the distances between the subdivided piles cannot be very great, a large and continuous water supply is specially important and it is well within the range of possibility that a fire may spread from one pile to another even after the wood in the first pile is nearly consumed as the radiated heat from the burning charcoal will be greater than that from burning wood and sparks will continue until nearly the end of the fire. The surfaces of nearby piles, unless they have been continuously and thoroughly wet will have been dried by the heat and be more easily ignitable. Moreover, as the number of piles is increased the surface subject to attack by exposure will be proportionately increased and the surface must be kept well wet down until the fire is completely extinguished, which, judging from past experience will probably be two or three days for each pile. If a second 10,000 cord pile should become ignited towards the end of the first fire it would require the water for nearly a week.

Subdivision.

Subdivision of pulp wood piles has two distinct objects, the first, underwriting and the second, engineering.

The object of subdivision from an underwriting standpoint is to reduce the value subject to a single loss to an amount which the companies writing the risk are willing or able to lose, however remote the possibility of a loss. With log piles, experience has shown that a total loss is probable if the fire gets a start, therefore the underwriting subdivision is more a function of the size and ability to pay on the part of the insurance companies than the chance of the loss occurring. This subdivision can be as well accomplished by dividing the risk among a large number of insurance companies as by subdividing the pile.

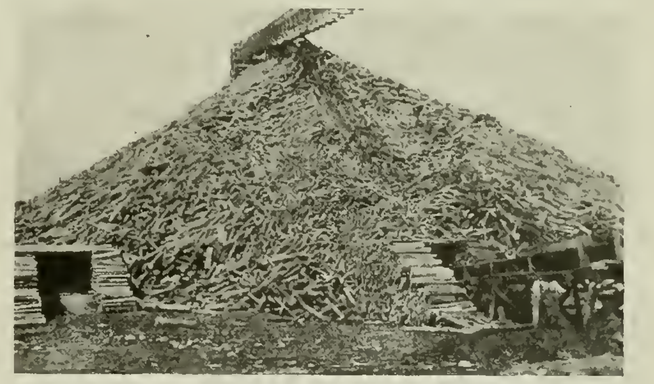

Figure 1.—Conveyor openings can serve as draft holes under a large log pile. This pile is being continuously wet by means of spray nozzles located on over-head conveyor and covering the most hazardous part of the pile. Water from this source which permeates down through the pile is constantly dripping inside these openings.

Subdivision from an engineering standpoint is governed by hazard and protection or in other words, the probability of a fire occurring within a given time and if it does occur the chance of putting it out with small loss. If subdivision is to be chiefly depended upon to safeguard a risk it should be such that each parcel subject to a single loss will not have a value greater than the average loss per fire in risks of all classes commonly written at the same rate and the separation of

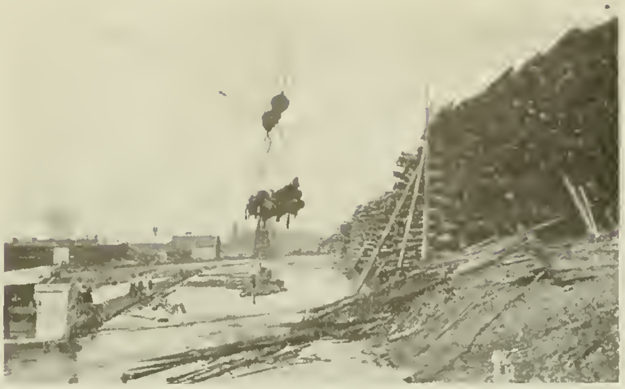

Figure 1. Cable Conveyor stacking long low piles of long logs on the sloping hillside beside the river.

the several parcels should be such that there is no chance of a fire spreading from one parcel to another with the protection at hand.

Danger of Holes Under Log Piles Which Can Admit Air Under the Piles.

Any form of openings under a log pile which can serve as a draft hole to admit air rapidly under the base of the fire is dangerous (See figure 1) as it will greatly increase the velocity of combustion and may quickly lead the fire down into the pile where it will be impossible to get at it with water from any practicable position. Such holes are common about large log piles, being left to accommodate reclaiming conveyors and the return side of the conveyor cable. Provision should be made for keeping all such holes, when not in use, tightly closed to prevent the admission of air, and immediate attention should be given to stopping them with dirt, bark or logs in the early stages of a fire.

Location of Hose Streams and Monitor Nozzles for Most Effective Service.

There has been some discussion as to the relative advantage of locating hose streams or monitor nozzles on top of a log pile or about its base. There are advantages in both positions and doubtless in most cases part of the apparatus should be placed in each position but the top of the pile is preferable at the start of the fire when there is the greatest chance of success in extinguishing the fire. Provision should also be made for the men easily and quickly to attain this position.

At first thought the base of the pile may be considered preferable as the heat and smoke will make the top of the pile untenable after the fire is under way and it is thought that water can be shot with reasonably sure aim, like a gun, from a safe and convenient location on the ground. It has been assumed that the wind and air current will remain the same with the fire in progress. This is far from true. The first fifteen minutes of the fire is the only time that any really effective fighting can be done where a large pile of dry wood is involved, therefore to be able to get at the fire quickly with a sufficient amount of water is absolutely necessary for success. The best location in the early stages of the fire is unquestionably the top of the pile in all directions with the shortest range, less inpile in all directions with the shortage range, less interference from wind and surer aim. After the fire is under way the updraft caused by the heat will be sufficient to deflect large hose streams sent up from the ground away from the base of the fire as the velocity of the water will be lost and it will come to rest in the air directly at the point where the updraft is greatest. The nearer to the fire the hose stream is located the greater possibilities there are penetrating this up draft by the force of the water and getting at the fire. With monitor nozzles or large hose connections distributed at short intervals along the top of the pile it will be possible to keep out of the smoke in the early stages when the up draft is less powerful and there is a chance of successfully extinguishing the fire, whereas, a few minutes later the chance of success is highly doubtful in any position.

Dry or Wet Wood.

Paper manufacturers prefer dry wood for making chemical pulp. This is sometimes obtained by piling in thin, well separated piles or by drying the chips but neither of these practices are common owing to the high cost of labor and other difficulties. Keeping the wood quite dry not only makes better pulp but reduces the loss from rotting, though wood kept continually very wet is not very likely to rot.

With the present high prices of wood more care will be used than in the past to prevent loss by both fire and rotting. In order to dry wood below the fiber saturation point of about 30 per cent moisture it is necessary to have the piles low with reference to the spaces between them, otherwise, they will absorb and retain sufficient water from rain to maintain the air in their neighborhood at nearly saturation which will retard the drying. With the great quantities of wood used in the larger paper mills it will require an immense area to store a sufficient supply for the time necessary to dry it by this method and stacking and recovery methods are expensive for such large areas.

Advantage may be taken of the slope of the land to distribute the wood from the top of an incline by sliding it from the cars at the top down inclined conveyors or shutes into long low piles and recovering it by continuing its course down hill to the wood room cars or conveyor at the bottom. Rough and tumble piles should not be over twenty-five feet high and twenty-five feet broad. With such a pile of barked wood on high ground where the lower average atmospheric moisture will hasten drying the moisture should be reduced to 20 per cent or less in a few months of dry weather. Ranked piles will doubtless be better. Such low piles, if well separated as will be required for efficient drying can be readily protected against fire by hose streams or monitor nozzles and the drying should be rapid enough to prevent loss from fungus for moderate periods of storage.

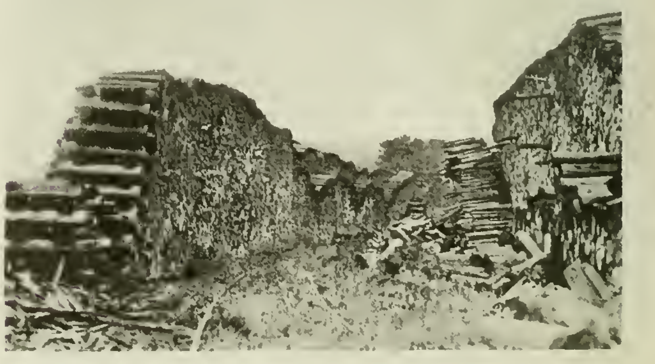

Figure 3.—Dark lines along the top of these log piles show the progress of rotting at the top of the pile where the fungus has been introduced by season cracks.

Cable conveyors have valuable possibilities for stacking long logs in low flat piles, convenient for drying and capable of effective hose stream protection as shown in Figure 2.

Dry wood can most advantageously be kept dry and wet wood kept wet. Wood received on cars which has been previously peeled and piled in the open for several months and has already dried to less than 50 per cent moisture can best be stored at the mill in such low piles as will prevent it from absorbing more water from rain. If dry wood is piled in large piles with wet wood it will take up water from the wet wood, both of them finally coming to a greater content of from 30 to 40 per cent which is the best amount for the rapid growth of wood destroying fungi.

Therefore, if the dry wood is piled separately in low, open piles as described above and the wet wood in high compact piles which are kept wet on the outside by water spray operating continuously in dry weather, both wet and dry wood will be kept as far as possible from the moisture content which causes the maximum rate of rotting and can be safely stored for the moderate time commonly required.

If it is necessary to store wood for several years it should either be stored in low, open, uniformly packed piles, protected on top to keep rain water out of the season cracks and well separated from the earth by rot proofed skids, or it can be stored under water.

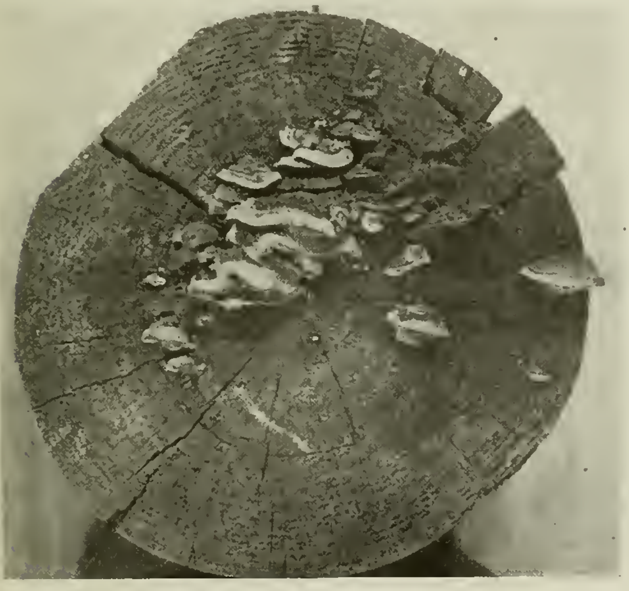

Figure 4.—Showing fungus plants encouraged by season cracks at the top of a log.

Season cracks in logs on top of piles encourage fungus by admitting water to the centre of the stick. This condition is clearly shown in the following photographs, Figs. 3, 4, 5 and 6. Logs on the top of piles exposed to sun and air will dry down to less than 10 per cent of moisture. In so doing season cracks will open on the tops of the sticks admitting rain water and fungus. The latter will germinate and send out thread like growths which will puncture the wood cells, admitting water to the wood again so that the dry wood will reabsorb rain water, coming back to over 30 per cent, at first locally near the cracks, and gradually extending through the stick. It will be noted that in case of partially rotted sticks the fungus plants first appear at the top near the cracks. Fungus plants also appear at the bottom of the pile where nearest to the earth and lack of circulation of air maintains the wood at a moisture of 30 to 40 per cent which is favorable for fungus growth. (Figure 6.) Fungus plants on the surface of the wood, or so called fruiting bodies, shown in figures 5 and 6 are supported by thread-like roots which have already penetrated considerable of the wood before the fruiting plants appear. These fruiting plants do not commonly appear on originally sound wood until after two years or more of exposure to the weather. It is probable that if the wood on the top of the pile is kept saturated with moisture so that the season cracks cannot open the introduction of the fungus will be retarded.

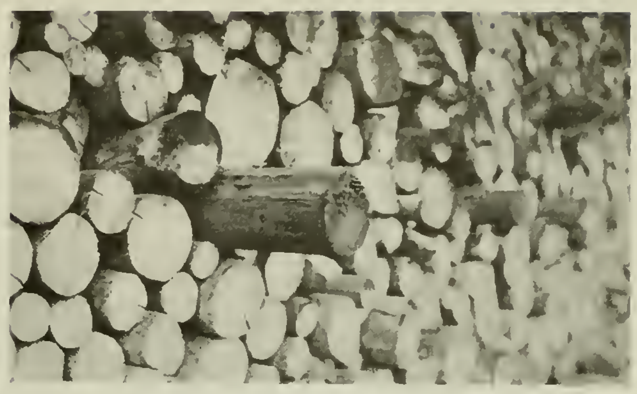

Figure 5.—Showing fungus plants from season cracks at the top of a log extending from the center of an evenly piled log pile. Note the dark top of the nearby log which extends only a short distance beyond the surface of the pile. The dark color is caused by the water absorbed through the season cracks and which is starting fungus growth.

Wood saturated with water so that its cells are completely filled will not rot and wood below 20 per cent of moisture is practically immune to fungus attack.

The exact moisture limits of the important wood-destroyng fungi are not known, but it is evident that the condition of most rapid fungus growth with common pulp woods is not far from the fiber saturation point, probably slightly above this point, or from 30 to 40 per cent moisture.

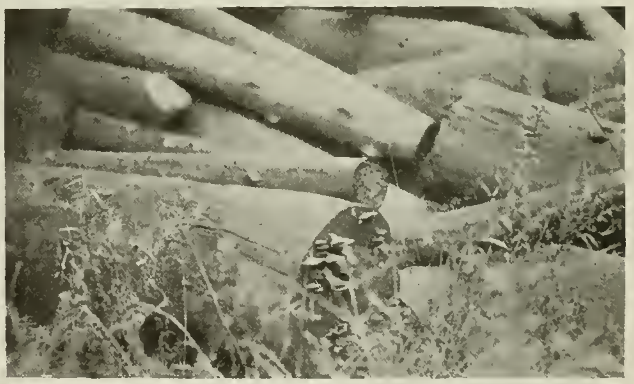

Figure 6.—Fungus plants on logs maintained at favorable moisture content by nearness to the ground.

(To be Continued.)

AGENTS.

Chas. A. Schieren Company, New York manufacturers of the well known "Duxbak" Leather Belting have appointed the Geo. F. Foss Machinery & Supply Co., Ltd., Montreal as their Eastern representatives and the Federal Engineering Company, Toronto as their Western representatives.

CANADA'S NOVEMBER EXPORTS 75 p.c. GREATER.

Canadian pulp and paper exports for November 1920, reached a total value of $14,355,435, compared with $8,016,990 in November, 1919, a gain of $6,338,445.

The exports of paper included 1,267,620 cwts. (63,381 tons) of newsprint, valued at $6,926,465; 5,292 cwts. (264 tons) of book paper, valued at $64,463, and other paper valued at $906,537.

Pulp exports included 183,102 cwts of sulphate, (kraft) valued at $1,123,967; 225,908 cwts of bleached sulphite, valued at $2,096,395; 336,403 cwts of unbleached sulphite, valued at $2,220,424, and 263,976 cwts of groundwood pulp, valued at $1,016,184.

The countries of destination were: Paper, United Kingdom, $233,667; United States, $6,202,816; other countries, $1,460,982. Pulp, United Kingdom, $192,749; United States, $6,009,739; Other countries, $254,482.

Unmanufactured pulpwood to the extent of 137,090 cords, valued at $1,948,241, was exported to the United States during the month, compared with 60,098 cords, valued at $635,361 exported in November, 1919.

For the first eight months of the current fiscal year, April, to November inclusive, pulp and paper exports were valued at $118,303,918 as compared with $64,626,540 in the corresponding months of 1919, and $53,954,984 in 1918, a gain of $53,677,378 over 1919 and of $64,348,934 over 1918. They exceeded by $13,668,580 the value of the total exports of pulp and paper for the entire preeeding fiscal year,

A tabular summary is as follows:

EXPORTS OF PAPER, WOOD PULP AND PULP WOOD.

November, 1918 and 1920; and eight months ending November, 1918, 1919 and 1920.

Paper		Month of November		Eight months ended November		
Printing paper		1918	1920	1918	1919	1920
Book paper	Cwt.	1,933	5,292	....	34,053	43,339
	$	19,787	64,463	....	311,974	465,053
Newsprint paper	Cwt.	1,136,651	1,267,620	....	9,056,677	10,093,150
	$	4,159,078	6,926,465	....	32,203,392	49,602,092
Printing paper	Cwt.	....	....	8,506,975	....	....
	$	....	....	24,988,899	....	....
Other paper	$	732,649	906,537	3,897,241	5,470,310	8,984,338
Total paper	$	4,911,514	7,897,465	28,886,120	37,985,676	59,051,483
Wood pulp:						
Sulphate (Kraft)	Cwt.	234,990	183,102	....	1,659,156	1,881,333
	$	761,283	1,123,967	....	5,470,813	9,838,972
Sulphite, bleached..	Cwt.	108,553	225,908	....	724,645	1,481,032
	$	565,139	2,096,395	....	3,618,103	11,949,010
Sulphite, unbleached	Cwt.	495,297	336,504	....	3,230,244	4,012,432
	$.	1,781,646	2,220,424	....	11,993,486	23,823,302
Chemically prepared	Cwt.	....	....	6,133,191	....	....
	$	....	....	21,760,738	....	....
Mechanically prepared	Cwt.	894,206	263,976	2,611,854	5,081,276	4,249,605
	$	997,408	1,016,184	3,308,126	5,558,462	13,641,149
Total wood pulp	Cwt.	1,733,046	1,009,490	8,745,045	10,695,321	11,624,402
	$	4,105,476	6,456,970	25,068,864	26,640,864	59,252,433
Pulp Wood	Cord.	60,098	137,090	1,132,987	631,941	915,336
	$	635,361	1,948,241	10,846,864	6,321,540	11,504,496
Country of Destination.						
Paper and manufactures of—						
To United Kingdom	$	316,566	233,667	623,841	2,739,417	3,045,228
United States	$	4,265,065	6,202,816	24,041,595	30,921,516	46,270,092
Other Countries..	$	329,883	1,460,982	4,220,684	4,324,743	9,736,163
Wood pulp—						
To United Kingdom	$	690,338	192,749	7,089	3,794,069	6,386,740
United States	$	3,041,832	6,009,739	22,800,989	19,818,130	49,291,301
Other Countries..	$	373,306	254,482	2,260,786	3,028,665	3,574,392
Pulp wood—						
To United Kingdom	$	....	....	....	....	....
United States	$	635,361	1,948,241	10,846,864	6,321,540	11,504,496
Other Countries..	$	....	....	....	....	....
Total Paper. Wood Pulp and Pulp Wood—						
To United Kingdom	$	1.006.904	426,416	630,930	6,533,486	9,431.968
United States	$	7,942 253	14.160.796	57,689,448	57,061,186	107,065,889
Other Countries	$	703,189	1,715,464	6,481,470	7,353,408	13,310,555
Totals	$	9,652,351	16,302,676	64,801,848	70,948,080	129,808,412

Facts About Present cost of Manufacturing Newsprint

Under this heading, the International Paper Company reviews the principal factors which affect the price of newsprint paper. This summary will be helpful in understanding the present situation.

In the latter part of 1918 this company issued a pamphlet entitled "Why Newsprint is High," which showed at a glance the enormous increases from a pre-war normal level up to that time in the cost of all elements involved in the manufacture of newsprint.

In spite of the ending of the war two years ago the curve of costs has continued to rise, and this compilation has been prepared to bring the story of increased manufacturing costs up to the last quarter of 1920.

The economic readjustment which has been manifested in other industries is not yet evident in newsprint manufacture.

Pulp Wood.

As wood pulps constitute about 98 per cent. of newsprint, wood to-day is the largest item of cost in the manufacture of that commodity.

An average of a cord and a half of rough wood, weighing approximately 6,600 pounds, is consumed in the manufacture of one ton of paper.

Prior to 1910, the average of prepared wood at the different mills of this company for several years was about $10 a cord.

For the next five years, 1910-1915, it averaged between $12.50 and $13.50 a cord.

The following table gives at a glance the average cost of prepared wood delivered at the mills of this company:

Cost of Pulp Wood.

1915, $12.90; 1916, $14.00; 1917, $16.31; 1918, $23.93 1919, $25.73; 1920 (9 months), $29.07.

It is to be noted that the costs above are average costs and are the result of averaging the cost of the company's operations on its own lands and the purchases of pulp wood from dealers and contractors.

Prices for prepared wood delivered have run far in excess of the average cost for the nine months of 1920.

Actual purchases of prepared wood this year in quantities of from 8,000 to 25,000 cords, have been at prices ranging from $30.51 a cord to $37.78 a cord, while wood has been seriously offered at $40, f.o.b. cars, that, on a prepared basis, would cost in excess of $60 a cord at Hudson River plants.

Labor.

Next to pulpwood, labor represents the largest item of cost in the manufacture of paper.

Including its woodland operations, the International Paper Company furnishes employment for about 15,000 people. In its various mills and offices it employs regularly 7,000 and up.

The following table gives the number of employes, the annual production in tons and the annual payroll in the mills:

Year	Number Employed.	Tons Produced.	Annual Payroll.
1915..	6,614	448,323	$ 3,894,073
1917..	6,922	532,589	6,643,772
1918..	6,762	472,668	8,265,939
1919..	7,000	472,007	8,802,859
1920*.	7,688	532,000	11,623,566

*Estimate based on record of six months.

Below are two tables which show the marked increase in the labor cost per ton of paper and the decreased production per capita since 1915:

1\.

Labor Cost per Ton.	
1915.	$ 8.68
1917.	12.47
1918.	17.49
1919.	18.65
1920.	21.85

2\.

Per Capita Production.	
1915.	80.05 tons
1917.	76.94 "
1918.	69.90 "
1919.	67.43 "
1920.	69.20 "

Table No. 1 shows this year 152 per cent. increase over 1915 and 17 per cent. over 1919.

Table No. 2 shows a decline in efficiency of 13.5 per cent. from 1915 and 1 per cent. from 1918. There has been an increase of efficiency over 1919.

The percentages of decrease in efficiency do not tell the whole story. During the period considered, especially in the past three or four years, the company has spent large sums for labor-saving devices of all sorts which should be reflected by an increase in the output per employe.

Lower cost levels and a lower price for paper can come only from cheaper raw materials, the installation of labor-saving devices and increased efficiency.

Transportation.

About four tons of material have to be transported to the mills for every ton of paper manufactured. These four tons of material include pulpwood, coal, lime, sulphur, clay, resin, pulps and mill supplies and replacements like wires, felts and screens.

Prepared wood weighs about 4,500 pounds to the cord and will make about one ton of ground wood pulp, or about one-half a ton of sulphite pulp. In round numbers, a ton of coal is consumed for every ton of paper, partly for power and for cooking sulphite, but principally for drying the paper.

These facts explain the great volume of freight involved in the manufacture of paper.

Rail Freights.

Before the Government took over the operation of the railroads in 1918, the Interstate Commerce Commission had allowed one increase of 5 per cent. and one of 15 per cent. On June 25, 1918, the National Railway Administration made a further general increase of 25 per cent. This made a total average increase of 48 per cent.

The recent increase of 40 per cent. in the territory in which this company's mills are located makes a total increase of 107 per cent. in rail freights since January, 1918. In addition to this, the rate on Canadian roads has also recently increased 40 per cent., which affects all pulp wood shipped by rail from Ontario, Quebec and New Brunswick.

The freight bills of this company for 1919 totalled between $4,000,000 and $4,500,000.

In 1920, because of the many embargoes, inability of the railroads to adequately handle traffic, lack of cars, etc., the cost to manufacture was considerably increased in addition to the actual freight paid. It was necessary to have men on the road tracing and rushing shipments and to have some material shipped at least part way by motor trucks. This condition was particularly noticeable in the winter months.

Because of the large quantity of raw material necessary to produce a ton of paper, the new freight increases effective August 26, 1920, will materially affect the cost of paper. This increase will amount to 40 per cent. in our territory, which will result, it is estimated, in an increase in the costs of about $4 per ton.

Last year this company used 636,634 cords of wood which weighed about 1,432,427 tons. About two-thirds is shipped by rail. The cost to move by rail after the new rates are in effect will be about 107 per cent. greater than in 1917.

Last year, this company used 391,265 tons of coal. With the new rates, the cost of transporting it will have increased about 83 per cent. over 1917.

The increased cost of freight on all other materials like sulphur, lime, resin, ground wood, sulphite and mill supplies in general, amounts to over 95 per cent. over 1917.

The new rates above will mean an increase of $4 per ton in the cost of making paper, while the increased cost of transportation since 1917 will be $6.50 per ton of paper.

Mill Supplies.

The rise in the cost of mill supplies has continued since the Armistice. Prices had advanced enormously by 1915, but from that time to the Fall of 1918, the average increase in the cost of 18 vital articles and materials was 136.66 per cent., the smallest increase being 67 per cent., while the largest was 335 per cent.

In spite of the ending of the war two years ago, prices of most mill supplies have continued to advance.

The twelve articles and commodities in the following table show an average increase of prices current in August, 1920, over the prices of 1915 of 271 per cent., as against the average increase of 136.66 per cent. of 1918 noted above.

Mill Supplies.

	Price. 1915		Market price. August 1920	% Increase.
Alum	$ 1.085	cwt.	$ 3.25	200
Clay	3.15	ton	10.00	217
Coal (Anthracite)	2.47	ton	7.85	218
Coal (Bituminous)	3.84	ton	15.42	300
Lime	.30	cwt.	1.00	233
Cotton Felts	.24½	lb.	1.00	300
Woolen Felts	58.59	each	135.40	127
Wires	150.00	each	396.00	164
Rope	.11	lb.	.35	218
Resin	7.40	bbl.	25.00	238
Soda Ash	.55	cwt	3.75	591
Fuel Oil	.85	bbl.	4.65	447

Annual cost of wires has increased $ 328,000
" " " felts " " 695,000
" " " coal " " 3,074,150
" " " fuel oil " " 2,089,725
" " " pulp stones " " 39 per cent.

The annual cost of these supplies has increased $6,187,000 since 1915, which figures about $12.00 a ton of paper manufactured.

Losses and Risks.

The paper manufacturing industry suffers many losses which cannot be insured and faces daily risks against which it is impossible to secure indemnifying policies. These losses and risks are many and varied but fall usually under the following heads:

Destruction of standing timber by fires, insects and disease.

Loss of wood from breaking of booms, floods and decay.

Loss of production from strikes, lack of labor, low labor efficiency, explosion of digesters, breaking of grinding wheels; from lack of transportation for wood, coal, wires, felts and indispensable supplies. Also from fires, breakage of engines and bursting fly-wheels.

Loss from advances to contractors, of interest on large sums invested in wood, from compensation in case of accidents.

These losses occur irregularly, but with periodical certainty, and their large total has to be considered over a term of years to ascertain a practical annual average to apply to costs.

Uninsurable Losses for 10 years to January 1, 1918.

Strikes and labor troubles	$2,541,866
Losses from floods	533,726
Losses in pulpwood	265,300
Total losses	$3,340,892

This enormous total of uninsurable losses for 10 years made an annual average loss of $334,089, which had to be considered in the category of operating costs.

Since the above figures were compiled, the Niagara Mill of this company was forced to shut down on account of the commandeering of its water power early in 1918 by the Federal Government. There was no production for 283 days in 1918, and only 1,134 tons made in the last 21 days in 1919.

The normal capacity of the mill was 154 tons a day.

The actual loss to the company on account of overhead, necessary salaries and maintenance for the nearly two years was $595,028.72.

The average profits on newsprint for 1918 were $9.22 a ton; for 1919, $8.98 a ton.

This figures a loss of possible profits during the two years of $818,965.

The bud worm infected 1,300,000 acres of woodlands, destroying 15 per cent. of the standing timber. This is computed at 1,000,000 cords, and this, at the low stumpage valuation of $2.50 a cord figures a loss of $2,500,000, which cannot be replaced.

Recapitulation.

The facts have been classified in order to give the cost history of each branch of manufacturing.

Below is a summary of the facts presented:

Pulp Wood.—Pulp wood during nine months of 1920 has averaged 232 per cent. of the cost of 1915, and 125 per cent. of that of 1918, while the price has apparently not yet reached its peak.

Labor.—According to estimates for the year 1920 based on records of the first half, the manufacturing payroll for the year will be nearly 300 per cent. of that of 1915, and 140 per cent. of that of 1918, while the labor cost in a ton of paper has advanced from $8.68 in 1915 to $21.85 in 1920.

Transportation.—Freights increased 48 per cent. from 1915 to the middle of 1918. The recent increase makes a total advance of 107 per cent. over the 1915 schedules.

Mill Supplies.—The average increase in the prices of mill supplies from 1915 to the Fall of 1918 was 136.66 per cent. Now, two years after the Armistice, the average increase is 271 per cent. over the prices of 1915.

Losses and Risks.—For the ten years ending in the middle of 1918, uninsurable losses averaged $335,000 a year. Since January, 1918, the closing of the Niagara Mill, a strike in 1919, and ravages of the bud worm in the forests have caused actual and potential losses aggregating $4,366,395.64, or, at the rate of $2,183,197.82 a year.

Industrial Notes From Aboard

Revised from the original by Dr. Paul Bartholow for the Pulp and Paper Magazine.

A RAPID METHOD OF CONTROL ANALYSIS OF THE LIQUOR IN THE MANUFACTURE OF SULPHATE CELLULOSE.

By G. K. BERGMAN.

(Finsk Pappers—Och Travarutidskrift, Nov. 15, 1920)

This research is intended to establish a good working method of controlling the liquor during the processes of sulphate pulp making. The work is urgently desired, for the fact is that exact methods of analysis of these lyes are lacking, both in the large hand-books and in the more popular trade articles. Hence an exact analytical method is now set forth, beginning with a comparison of the values of amplified processes.

In a work recently published Schwalbe and Sieber (Die chemische Betriebskontrolle in der Zellstoff und Papier-industrie, Berlin 1919), supply a number of methods suited for the case in question, but the collection or summary is somewhat marred by errors in printing and in the citations of the sources of information. The white liquor, which is employed in the manufacture of sulphate pulp, consists, as we know, of a mixture of sodium hydroxide and sodium sulphide as chief constituents, together with some sodium carbonate, small quantities of sodium silicate, or thiosulphate, and a greater or less proportion of sodium sulphate. The white liquor is prepared from a solution of fused soda, the so-called "solution" causticised with lime. Thus the "solution" contains as its principal components, carbonate and sulphide with silicate and sulphite, but also some hydroxide, the last named on the ground that a portion of the water from the molecule is led back into the solution.

To determine the various anions in these solutions Lunge and Lohofer in 1904 worked out a method which seems to be in all respects suited to the purpose. Briefly it consists, partly in titrating the alkalies with acids, using phenolphthalein and methyl orange as indicators, partly in iodometric titration of the whole quantity of sulphide and sulphite; then the sulphite alone was titrated, and, further, after distillation in the usual manner and treatment with hydrochloric acid, the silicic acid was estimated by quantitative analysis as SiO_2 together with sulphuric acid precipitated and determined in the filtrate as $BaSO_4$.

I have already pointed out that the method as a whole is not suited for control during the course of actual operation, since a number of daily tests must be made in a short time. Kirchner's method has the same fault; it is really an adaptation of Lunge's method for the analysis of Le Blanc's raw soda, though contrary to Lunge's practice, the sulphides are titrated with a silver solution.

According to Lunge and Lohofer by titration with acids or hydrochloric acid, using methyl orange as indicator, nearly the total alkali in the liquor is determined, namely:

I. $Na_2CO_3+Na\ OH+Na_2S+Na_2SiO_3+\frac{1}{2}Na_2SO_3$

on the other hand, by titration with phenolphthlein as indicator—

II. $\frac{1}{2}Na_2CO_3+Na\ OH+\frac{1}{2}Na_2S+Na_2SiO_3$

This result we may amplify as follows. Taking into account the fact that the quantity of silicate in cellulose produced from wood is relatively negligible, and that the proportion of sulphite is likewise insignificant, a simple, approximate determination of the principal constituents of the lye, may be effected by titrating with methyl orange as indicator—

I. $Na_2CO_3+Na\ OH+Na_2S$.

with phenolphthalein as indicator—

II. $\frac{1}{2}Na_2CO_3+Na\ OH+\frac{1}{2}Na_2S$.

To determine the three unknown quantities, Na_2CO_3, $Na\ OH$ and Na_2S, we require three equations. The three equations are obtained by determining the sulphides. Hence, titrating with iodine solution we obtain three equations, comprising the values for sulphides—

III. Na_2S.

However, the problem can be solved in a simpler manner by using simply one solution or acid titration. For this purpose we made use of the well known method of determining caustic alkalies in the presence of carbonate by means of titration with acids after the addition of an excess of barium chloride solution; whereupon we determined, using phenolpthalein as indicator—

IV. $Na\ OH+\frac{1}{2}Na_2S$.

Depending upon how we wish to combine three of the foregoing reactions, we proceed to some other processes by determining and estimating the carbonate, hydroxide and sulphide. This was done by means of titrations giving the quantities required in cubic centimeters of normal solutions per definite amounts of lye, for example, thus:

10 c.c. of lye titrated with acid, methyl orange *a* c.c. n/1; 10 c.c. of lye titrated with acid, phenolphthalein *b* c.c., n/1; 10 c.c. of lye titrated with acid, barium chloride & phenolphthalein *c* c.c. n/1; 10 c.c. of lye titrated with acid, iodine *d* c.c. n/1; we obtained the following results, and from the estimated values of Na_2CO_3, $Na\ OH$, and Na_2S in 10 c.c. of lye, expressed by a, b, c, d.

Simple Alkaline Titrations.

I. $Na_2CO_3+Na\ OH+Na_2S=a$.
II. $\frac{1}{2}Na_2CO_3+Na\ OH+\frac{1}{2}Na_2S=b$.
IV. $Na\ OH+\frac{1}{2}Na_2S=c$.
$Na_2CO_3=2\ (b-c)$ c.c. n/1.
$Na\ OH=2\ (b-a)$ c.c. n/1.
$Na_2S=2\ (a+c-2b)$ c.c. n/1.

Alkaline and Iodometric Titrations.

A(I. $Na_2CO_3+Na\ OH\ \ Na_2S=a$ c.c. n/1.
II. $Na_2CO_3+Na\ OH+\frac{1}{2}Na_2S=b$ c.c. n/1.
III. $Na_2S=d$ c.c. n/1.
$Na_2CO_3=2\ (a-b)-d$ c.c. n/1.
$Na\ OH=2b-a$ c.c. n/1.
$Na_2S=d$ c.c. n/1.

B(I. $Na_2CO_3+Na\ OH+Na_2S=a$ c.c. n/1.
III. $Na_2S=d$ c.c. n/1.
IV. $Na\ OH+\frac{1}{2}Na_2S=c$ c.c. n/1.
$Na_2CO_3=a-c-\frac{1}{2}d$ c.c. n/1.
$Na\ OH=c-\frac{1}{2}d$ c.c. n/1.
$Na_2S=d$ c.c. n/1.

Of these three formulas the alkalimetric method is, without doubt, the simplest, since it requires only one solution for titration and two indicators, which is an unquestionable advantage in mill control. Lunge and Lohofer have launched their anathema against the employment of barium chloride in the presence of silicate, and point out that only a portion of the silicate, 50--60%, is precipitated from the solution. Lunge in his well known handbook, "Chemisch-technische Untersuchungsmethoden," observes that, with methyl orange, the hydroxides plus the "total" sulphides are titrated, but with phenolphthalein, on the contrary, the hydroxides plus "half" the sulphides. Christiansen (Uber Natronzellstoff, p. 45) makes the same error, and, regrettable as it is, in the determination of the active alkalies in the lye for cellulose making.

Our investigations, therefore, are intended to explain how far the methods given above are to be employed, and to what extent they differ from the values which, according to Lunge and Lohofer, are exact.

The analysis was carried out in the following manner:—

From the original lye 100 c.c. are pipetted off, and diluted to 1 liter with cold water as free from air as possible. The solution is filtered. For the alkalimetric determination 100 c.c. (10 c.c. of the original lye) are pipetted off and cooled; titrated with hydrochloric acid and phenolphthalein added while the flask is stationary. When the end-point is approached, acid is added drop by drop while the action is constantly watched, and with sufficiently long intervals between the drops. When no shade of rose color can be seen in the solution, the values used are noted in c.c. These are =*b*. The titrations are then continued in the same manner after the addition of methyl orange and titrated to rose. This result =*a*.

Direct titration with phenolphthalein as indicator after the addition of barium chloride produced no precipitate, with others have mentioned (Kuster, Zeitschr. f. anorg. Chemie 127, 1897); otherwise the process was carried out as in the determination of *b*. The result gives the value of *c*.

For the determination of sulphides, or the value of *d*., 50 c.c. of n/10 iodine solution were pipetted off, acidified with acetic acid, and 25 c.c. of the lye, diluted in the described manner, were added to the solution. An excess of iodine solution is present at this point, and is titrated again with n/10 of a solution of sodium thiosulphate or sodium arsenite. The result is estimated on 100 c.c. of dilute lye, and the value thus found =*d*. As material for the analysis various samples of soda lye and white liquor from sulphate cellulose mills were used.

According to the tabulated results the proportion of silicate and sulphite in these lyes is not particularly significant. The error caused by leaving these quantities undetermined is therefore not great. If the quantities of silicate and sulphite remain constant during working conditions, the results of the analyses are most satisfactory in bringing to light the changes of values of the chief constituents, hydroxide, sulphide, and carbonate. In a purely mathematical manner we can easily see how our errors can be smoothed out and how they tend to accumulate. For example in estimating carbonate according to the formula $Na_2CO_3=2(a-b)-d$, and using the alkali-iodometric method A, a constant total is obtained, depending however upon the observation that silicate and sulphite, if present in sufficient quantities, are wholly or partly eliminated. On the other hand it is easily shown that values of carbonate by the alkalimetric method $Na_2CO_3=2(b-c)$, in most cases, work out very high, the error being introduced by the quantity of silicate. In such cases two chemical factors take a part, namely, in titrating carbonate with phenolphthalein as indicator the end-point seldom occurs exactly, since half of the carbonate is neutralized—a circumstance that lies outside the scope of this article—and the inaccuracy, previously mentioned, of the barium chloride method.

That the quantity of sulphide, as determined by d. of the iodometric titration, always works out too high, owing to the proportion of sulphite in the liquor, lies in the nature of things. For a correction of this error, however, we can go to control determinations of silicate and sulphite, easily showing in this way whether the error exceeds reasonable limits, and arriving at true values.

In most mills the method of working is the determination of causticity. To determine the caustic strength of soda lye, the liquor is treated with phenolphthalein and methyl orange as indicators and the ratio between the quantities of normal acid is estimated, expressed in per cent, or, in other words, we calculate, according to the determinations given above the value of 100b — a; the greater this number, the higher the causticity.

A solution of pure sodium carbonate, according to the calculation 100 b — a, has a theoretical causticity of 50 per cent. From this it follows that a lye cannot be found with a causticity less than 50 per cent, although such a lye is not in itself wholly active as caustic. In the pure sodium carbonate process this method of estimation is, therefore, nearly without significance; expressed as 100 (2b--a) — a, it gives the correct value. In the sulphate process matters are somewhat different. Here sulphides are present, which are estimated with the active alkalies. In this case, if the quantity of sulphide in the lye is equivalent to the quantity of soda, the formula 100b — a gives the correct value of causticity. If the quantity of soda is considerably higher than the quantity of sulphide, the result of the titrations gives a higher caustic value, and, conversely, if the quantity of soda is lower, a lower causticity. Thus it depends upon the ruling conditions, whether the method gives correct or incorrect results.

By causticity is meant the ratio of active to total alkali.

PROCESS FOR MAKING BRIGHT, WHITE GROUND WOOD PULP.

The grinding of wood for paper making follows a purely mechanical preparation—peeling, removal of the branches, rotten and diseased portions. The fibres are softer when the wood is cooked or steamed before grinding. If it is cooked in water at a temperature not above 100 deg. C., a bright pulp is obtained. Cooked at temperature above 100 deg. C., and under a pressure of 3--4 atmospheres, the fibrous mass is brown, suitable for making tough boards. By the patent Enge process, a pulp can be obtained that is at once tougher, whiter and more colorless, although the temperature employed rises above 100 deg. C.

According to the patent, after preliminary treatment of the ground wood with hot water under pressure in a closed receptacle, a white pulp is obtained even at a temperature of 125 deg. C., and when the pressure maintained is higher than the steam pressure. Two to three hours' treatment is sufficient. The preliminary treatment of the wood with water under 100 deg. C., in a closed vessel has been proposed already for the production of a white pulp. But this process requires several days, while by the new method, a few hours only are taken, and a much better and tougher pulp is yielded. By the application of high hydraulic pressure the decolorizing of the wood is considerably delayed, so that, for example, at a temperature of 120 deg. C. and an hydraulic pressure of 10 atmospheres, a pulp is produced which, after the ordinary blueing, can only be made into print paper. But in this new process it is immaterial whether the stock is brought to the temperature of treatment first and, then, subjected to pressure, or whether it is subjected to pressure first and then brought to the temperature of treatment. For eaxmple, the filled receptacle can be brought to a temperature of 110 deg. C. by the copious introduction of dry steam; the steam is then turned off and the pressure in the receptacle raised to 10--13 atmospheres by pumping up hot water, whereby the further boiling of the water is prevented. The wood is exposed during as short as possible to a temperature above 100 deg. C. and to a corresponding steam pressure in order to delay the decolorization. With pressures of 10--13 atmospheres water penetrates the wood cells at the maximum rate of speed, while lower pressures necessitate a longer treatment.

Pulp produced by this process is suited for glazed papers, for under the microscope, the cellulose shows no chips; it is soft and flexible in all its portions. In addition pulpwood may be softened by treatment with water under 100 deg. C. in such a manner that it is more easily ground, with a saving of time, and yielding white pulp, which is capable of immediate manufacture into paper and strong boards. This is effected according to German patent 288,717 by treating the wood with hot water in a closed vessel under pressure. In this way thorough and even penetration of the wood by water is attained, a result not accomplished by the ordinary cooking process. The filled vessel is subjected to steam or air pressure, or the required pressure is produced by means of a pump. The dry empty receptacle is packed with stock, and then steam is run in until a temperature of 100 deg. C. is reached, when water is forced in by means of a pump, until the desired high pressure is produced. To shorten the process a pressure of over 5 atmospheres is recommended. When the wood is thoroughly permeated by water, which is the case in a few hours at pressures of 10 atmospheres, a great economy of power for grinding is achieved. Moreover the paper made from such pulp requires very little steam for drying.

The penetration of the wood with a circulation of water at 100 deg. C. for the purpose of reducing the work of grinding and for the preparation of a flexible, tough and uncolored fibre, can also be effected in other ways (Ger. pat. 315,679). The air is removed from the receptacle in which the wood is packed until a vacuum of about 50 per cent. is reached. The receptacle is then filled with water at 80 deg. C. until the wood is covered by the fluid. Above this a free space must still be provided. Owing to the vacuum the water begins to boil, while the air pump is at work during the entire process of cooking. Likewise the water must be kept at a medium temperature of 80 deg. C. by means of a heating device. In this process the wood is completely permeated by water at the end of 6-8 hours. The wood remains white, and a further advantage consists in the fact that the vessel or digester need not be so strongly made, as it has no pressure to withstand. — Papier-Markt, December, 1920.

PRODUCTION OF PAPER IN GERMANY.

The home demand for paper and boards, which continued to be unsatisfactory in September, improved during October. A set-off to the insufficient home orders is the somewhat greater foreign demand. The supply of coal in October was still inadequate; the shortage was the more acutely felt as conditions of water power were also bad. Many mills working with water power were forced to restrict their operations, in some cases, to close down entirely. From many quarters, also, complaints come of the lack of cars. —Wochenblatt fur PapierFabrikation, Nov. 20, 1920.

NEW PROCESS OF PRODUCING CELLULOSE FROM STRAW, WOOD, ETC.

Abstract of German Patent 306,325 granted to

HEINRICH OEXMANN.

To effect greater economy of the alkalies of higher values may be attained in the following manner. The digestion of the material to be disintegrated is effected first with the weaker alkalies, and next when the acids, which are more readily set free, are in their uncombined state, the stronger alkalies are brought into the reaction, in order to produce a complete solution of the encrusting substances.

In practice, for the disintegration of of 100 kg, of straw, it has proved sufficient to cook them with 400--600 liters of water, and 5--6 kg. of caustic potash during an interval of 4--6 hours, with or without pressure; 4 kg. of caustic soda are then added to the lye, and the whole cooked for another 4 hours. The stock is washed off and subjected to further treatment in the usual manner; and it was subsequently shown that straw treated by the method just described is, in all portions, of a value equal to that of straw treated with 9--10 kg. of caustic soda. (Caustic potash is about 5 times the price of caustic soda!—Ed.). It is best to allow the potash suspension to run out before the second cooking, for, by this means, the acids which combine in the first stage of the process are prevented from forming additional combinations with the stronger alkalies.—P.B.—From Wochenblatt fur Papierbrikation, November 27.

CHRISTMAS TREE AT CRABTREE MILLS.

A very pleasant evening was spent on Friday, December 24th, at the "Beaver S" Club, Crabtree Mills, where two hundred children, families of the employees, were entertained at their first annual Christmas Tree. The concert and entertainment were given by the children, under the direction of Miss Campbell, and it is indeed pleasing to note the progress the children are making who attend this school. Another interesting feature, which shows the loyalty of the employees of this Division, was their superintendent, Mr. Kay Crabtree was the recipient of a silver tea service and a case of pipes. The Reverend Father Archambault, on behalf of the employees, made the presentation.

FLYING STUDIES OF FORESTS AND INSECT DAMAGE.

If the Air Board of Canada can give a few more demonstrations of the time-economy of aircraft, such as occurred recently between Ottawa and Haileybury, Ontario, the stimulus to civil aviation will be materially strengthened.

Col. Robert Leckie, D.S.O., M.C., D.F.C., Superintendent of Flying Operations, Air Board, Ottawa, Mr. Clyde Leavitt, Chief Forester, Commission of Conservation, Ottawa, and Dr. J. M. Swaine, Chief of Division of Forest Insects, Entomological branch, Dept. of Agriculture, Ottawa, comprised the aerial party.

The plane left Ottawa at ten o'clock, a.m., following the Ottawa River to Mattawa, thence to North Bay arriving at 1.15 p.m. where a stop was made for dinner and a fresh supply of gasoline. At 2.45 the air travellers left North Bay, returning to Mattawa to follow the Ottawa River again, as far as Kipawa and up Lake Temiskaming, reaching Haileybury at 4.20 p.m. The actual flying time was five hours, at an average rate of 65 miles per hour. The engine is a 350 horsepower, twelve cylinder V type, stationary Liberty motor, and was used by the Naval Board during the war. The airship carries tanks with a capacity of 100 gallons of gasoline sufficient for about five hours constant flying. Her rate of consumption is 28 gallons of gasoline an hour.

The party was met at Haileybury by Capt. Wickens, deputed by the Air Board to operate the machine, while it is in that district, and by Mr. Roland D. Craig, Forest Engineer for the Commission of Conservation and Major G. H. Edgecombe, who are conducting a survey of the forest resources in Ontario, with the view of finding out the present and possible future supplies of timber from which the pulp and lumber industries of the province can be supplied. This work is under the direction of Mr. Craig, who conducted similar surveys in British Columbia. Major Edgecombe and Mr. A. V. Gilbert are also engaged in collecting the necessary information for this survey.

During the war the value of aircraft for mapping and reconnaissance was demonstrated, and now a number of planes are being used for this in forestry work in Canada. The Air Board having been given over 100 machines of different types by the Imperial Government is co-operating with the other Government departments by supplying machines and pilots for such work as mapping, forest fire protection, fisheries patrol and transportation.

Taking advantage of this opportunity, Messrs. Craig and Edgecombe are going to make reconnaissance of the forests in the Temiskaming district from the air, in connection with Dr. Swaine's Spruce Budworm studies.

The advance of the aerial survey is that it enables the observer to map in, with considerable accuracy, the various types, such as swamps, burns, hardwoods and softwoods, in a few hours on an area which could not be covered by a ground survey in as many months. It is not claimed that the amount of standing timber can be judged from the air, but with the area defined, a comparatively small amount of ground work will give a very satisfactory basis for a timber estimate.

Dr. Swaine is studying the injury caused by the outbreak of the spruce budworm which is spreading into Ontario pulpwood forests from Northern Quebec. The injury is to the balsam and spruce timber, and is caused by myriads of caterpillars devouring the foliage. The injured timber turns red and may be distinguished from the air. It is planned to map this area, and the timber owners can then be advised of the rate and direction of the spread, so that they may salvage their timber in advance of the outbreak.

Immense destruction has been caused by the spruce budworm in the Provinces of Quebec and New Brunswick, and this sudden extension of the outbreak into Ontario threatens all the spruce and balsam timber between Lake Temiskaming and the Great Lakes. In conjunction with the air survey, detailed entomological studies are being made by ground survey.

The plane and party remained in the north for about three weeks with Haileybury as the base. Col. Leckie returned to Ottawa in preparation for his flight across the continent from Halifax to Vancouver. On this trip he will come north as far as North Bay travelling from there in the direction of Georgian Bay and the Great Lakes. He was much taken up with the country covered and describes the Ottawa valley as a "wonderful sight" from the air.

Apart from their baggage, the flyers brought some personal mail from Ottawa to Capt. Wickens and Mr. Craig, which marks the first time in the history of the north country that mail has been brought by aeroplane.

NOBODY HURRIES A TURTLE.

By JOHN BLAKE.

Most men are irritated by a driving boss. It is natural to want to take our time—to do things in our own way.

The man who stands at our elbow, always urging us to speed up, annoys us. We resent his nagging. We feel that we could do much better if we were left alone.

But you will notice, if you are observing, that the boss doesn't waste much time urging hopeless laggards to work faster.

The reason he keeps after you is because he has found out that you are capable of speed. And if he can get it out of you, thereby teaching you to get it out of yourself, he has done you a service.

Nobody hurries a turtle. It would be utterly useless to do so. The turtle is utterly indifferent as to whether he ever gets anywhere or not. He speeds up only when falling off a log into the water, and then only when he fancies his life is in danger.

You ought to be complimented by the demand that you do more. It shows that there is something in you worth cultivating. Attention from the man higher up is a good thing. He wouldn't bestow it on you if you weren't worth it.

In these modern days speed in business is absolutely requisite. The leisurely methods of fifty years ago would drive any firm into bankruptcy.

"DO IT NOW" is posted in most offices, and for excellent reasons. Only by hurrying the work along can the inertia of the average business office be overcome.

Only by knowing that you have got to get things done in time can you escape the habit of procrastination, the most vicious and persistent that you can acquire.

Be cheerful when you are asked to accelerate a little. With practice you can learn to do it without being told. And when you can work rapidly and skilfully, you will soon begin to pull far ahead of the other starters in the particular race you are engaged in.

(Copyright, 1920, by John Blake).

WHAT CONSISTENCY MEANS.

A reader of the Pulp and Paper Magazine asks what is meant by the expression, "stock of 5 p.c., etc., consistency." Perhaps the following explanation will interest others who may also be puzzled.

The first point to have in mind is that the paper man considers dry stock to be what is known as "Air Dry". In this condition paper making fibres are assumed to contain 10 p.c. of moisture and 90 p.c. of bone dry solid material. This is approximately the proportion that would result by long exposure to normal atmospheric conditions. When it is stated therefor that the stock in a beater has a consistency or concentration of 5 p.c. or in a stuff chest 3 p.c. or at the screens 1 p.c., it means that 5 p.c. or 3 p.c. or 1 p.c. respectively of the total weight is air dry paper making material. There are cases where the concentration is greater and also where the concentration is less but the meaning is the same.

If we wish to determine accurately, the concentration of a certain stock we should have to remove all of the water because it is not possible to stop at a moisture content of 10 p.c. as there is no way of knowing when this point is reached. The procedure would be to take a sample after the stock had become thoroughly mixed; to weigh accurately a certain amount, a convenient quantity would be 100 grams; squeeze out without loss of fibre as much water as could thus be conveniently removed. and then to dry the remainder where it would neither char not become contaminated, until there was no moisture left; in other words when two successive weighings of the residue were identical. This would not be air dry but what is known as bone dry fibre, the 10 p.c. of moisture having been removed with the bulk. Thus if we had started with 100 grams of a stock we should have left 4.5 grams of bone dry solid matter. This is the quantity that would be present in 5 grams of air dry stock since 5 grams of air dry stock would contain 10 p.c. of moisture and 90 p.c. of fibre, and 90 p.c. of 5 grams is 4.5 grams. It is obvious therefor, that if we wish to convert the bone dry residue into the equivalent quantity of air dry stock, we must divide by .9. For instance 4.5 grams divided by .9 equals 5 grams: and 5 grams is obviously 5 p.c. of 100 grams.

As another example, suppose we take from the flow box on the paper machine a sample of the stuff passing and weigh out a sample of 102.3 grams. This is completely dried in this case entirely by evaporation as it would be difficult otherwise to remove water without losing considerable fibre. The bone dry residue weighs .738 grams. From what we have said this must be divided by .9 in order to find the amount of air dry fibre. This, it will be observed, equals .820. The percentage of air dry fibre then in the machine stuff is .820 divided by 102.3, multiplied by 100, which gives 8 p.c. consistency. A properly used filter will remove the bulk of the moisture).

In papers which contain fillers this result will not be actually fibre but the actual fibre contained could be determined by burning. The final residue will be the loading and other mineral material contained in the paper.—J. N. S.

To deal in and manufacture all kinds of paper, pulp etc., the T. B. Little Company, Limited, has been granted incorporation with a capital stock of $200,000 and head office at Montreal. Montreal lawyers are named as the incorporators.

LORD BEAVERBROOK ON NEW BRUNSWICK.

Lord Beaverbrook is reported to have predicted great developments in New Brunswick pulp, and as having said that the Eastern province has enormous possibilities for the manufacture of pulp and paper from its wealth of spruce. A very informative article from the London Bureau of the Financial Times in this connection reads:

"New Brunswick's wealth", says Lord Beaverbrook, "largely consists in its enormous timber resources. The Provincial Government owns over 11,000 square miles of timber land. Though the principal wood is spruce, the province has devoted itself to the timber industry and has not taken up as it should the pulp and paper resources. This is accounted for to some extent by the lack of water-power in the province; but when one thinks of the magnificent water power at Grand Falls left undeveloped, the defense of lack of water-power seems insufficient to account for the neglect of an enterprise with such enormous possibilities as the manufacture of pulp and paper from the wealth of spruce possessed by the province. Besides the government timber lands there are hundreds of thousands of acres of timbered railway lands, freehold and undeveloped. The Americans complain of the embargo on export of timber cut on Crown lands, but here are the railway lands in New Brunswick, with no restrictions on the export, awaiting development.

"The future development of the world must be domiciled where there are natural resources. I look forward to a great future for New Brunswick because the Province has enormous natural resources—timber limits and power sites valuable beyond my power of calculation. Look through the pages of history to see where industry and enterprise have thrived, and you will find that they always prospered in places where there was abundant raw material that could be conveniently distributed. Newsprint can be distributed from any port, and New Brunswick seems to me to fulfill all the conditions for success. So I look for an enormous industrial development.

"The banks, with head office at Montreal and Toronto, which collect plenty of money in the province, are apt to become a little sticky when there is a question of making loans there. The banks seem to me to think too much of the west and to ignore the east. They lack proper perspective. Still there is much to hope for in New Brunswick, while we have men like Archibald Fraser developing the pulp and paper industry at Edmundston and on the Miramichi and Angus McLean, doing similar work on the Nepisiguit.

WAGES DROP IN N. B. WOODS.

St. John, N.B., January 3. — Wages in the lumber woods of New Brunswick have taken a big drop this year. The prevailing rate of pay at this time is sixty dollars per month, with board, whereas last year it was seventy-five or eighty dollars per month. In one camp a crew that had been receiving sixty dollars a month recently made a demand for ninety dollars. When the increases were refused, fifty quit the job at once, but their places were filled in short order by other men, who accepted the sixty dollar rate.

So far the pulp mills have been busy cutting their raw materials in the woods, but there are rumors afloat that these will shortly reduce their staffs.

A CONTRAST IN MILL CONDITIONS.

(From "The Paper Makers' Journal," Nov. 1920.)

The Editor has been greatly impressed with the splendid improvements made for the convenience and comfort of the employees in some of the mills; and the intent of others to provide for suitable accommodations, whereby the wage-earner is treated something like a human being, where the surroundings are fitted for human beings, as compared with the old way of things and the old order that is still in force in some localities, where the last thing some employers seem to think of, is the convenience or comfort of their employees.

The toilet accommodation in some mills, would be nothing to brag about if it were for the use of swine, and certainly deplorable to be used by human beings.

Very recently I had occasion to visit Glens Falls, New York, and visited the mill of the Finch-Pruyn Paper Company and was much impressed with the conveniences provided for the employees by that company. They have a wash room equipped with the most modern of plumbing; toilets, shower baths, etc., that would not be second to the equipment of some of the best hotels, but which would compare favorably with the best. Suitable lockers are provided in a sufficient number to accommodate the employees. These are on the first floor.

On the floor above, a cafeteria has been provided, in which any employee can get either a full meal or a light lunch at any time during the day or night. Chefs keep the cafeteria open from early in the morning until 2 a.m. the next morning; and between 2 a.m. and 7 a.m. a watchman or timekeeper would furnish food or coffee to any of the employees.

The furniture of this cafeteria is splendid.

This floor of the building is so constructed that it can be divided into three rooms, or by the use of folding doors it can be made into a big hall.

There are pool tables for the convenience and comfort of the employees, and many comfortable chairs, that those who wish to read or smoke may enjoy themselves. All these conveniences are open to the employees day and night.

The employees evidently appreciate this, as I am advised that they are holding a series of socials, and the money raised therefrom is set aside into a fund to be used in case of sickness or accident, not covered by the Compensation Law.

The whole system of dressing room, bath room, dining room, lockers and recreation room, is as clean and well kept as the best regulated hotel in the country.

Going into the mill one is impressed with the same cleanliness, and some effort made at improved machinery. On the machines they have an attachment for washing felts, in which it is claimed that the production of the machines is increased as they are not required to lose time during the day or night washing felts, as it is claimed for the attachment that the felts can be washed without even breaking the paper down on the machines.

The system simply is running warm water on the felt and drawing it out through a suction box with a very strong suction.

I have been asked if I think this system a success. My answer is that nothing will be a success that is not tried. There may be some difficulties that must be overcome. If the production, however, is sufficiently increased (considering quality, of course), to pay for the installation and operation, for without doubt, there is some power required to operate a suction pump, and the wear on the felts due to the use of suction boxes; my opinion is that it would be a success. Those matters, however, must enter into the subject in determining the success of the attachment.

The writer was impressed with another attachment and for the want of a better name, I think they are calling it a Silencer and Cleanser. The attachment is a round, hollow roll, full of holes, so that when the stock is flowing from the screen over the dividing board in the head box, it passes through this roll with the intent of breaking the currents, and in that way would get its name of "Silencer." In other words, the intent is to run the stock as evenly as possible through the vat, and just before it reaches the apron board it again passes through another roll having the same effect.

It is claimed by all the men on the machine that it doesn't gather lumps, and does materially help in causing a uniform sheet; eliminating to a great extent the waves and currents, while the paper is in the state of formation on the wire, which are so troublesome to the average paper maker.

The writer was in another mill, recently, and will refrain from using the name; but the contrast between the two mills was so noticeable, it is worthy of mention.

In the latter mill, upon entering, one is impressed with the absolute disregard of the value of the stock or the value of machinery or any of the parts thereof. What otherwise would be considered good, clean pulp, one would think was placed for the purpose of wiping muddy feet on it; and placed in a manner that one would have to climb over the pile. The machinery possibly had not been wiped up in a year, if ever, and from the appearance, would indicate never.

The men's clothing hung on the wall. When they changed clothing when going off tour, they had to do so right in the open. If anyone wanted to wear another's clothes, they could do so because they hung right on the wall.

There were no conveniences for keeping clean, no bath rooms, nor lockers; and the toilet one would hardly want to put pigs in.

The management gives as a reason, that they couldn't afford to spend the money for the necessary improvements and establishing a system by which stock and material would be saved.

My opinion is that the mill with the improvements, that has been kept clean, with thought of the employees, co-operation and successfully working out new improvements, is the more successful mill; much more successful than the mill in which seemingly there is no attention paid to sanitation, improved machinery, etc. There is no question in my mind but that if you were to ask the workman who had an opportunity of going to either mill of the two in question, to work, where he would rather work, his answer would be the "Clean" mill.

CATALOG RECEIVED.

The editor has received Catalog "F" which illustrates and describes the various types of Heaters, Condensers, Expansion Joints, Coolers, and Airjector Pumps, manufactured by the Ross Heater and Mfg. Co., Buffalo, N.Y.

LESS PAPER PRODUCED IN UNITED STATES.

The Federal Trade Commission reports the paper production for November, 1920, as 518,144 net tons. Comparisons with previous statements shows that this is the smallest monthly output of the year, as was expected in view of the decrease in business and the sharp curtailment throughout the industry. The November output was no less than 150,000 tons under the highest for the year of 658,518 tons in July. The production was 51,000 tons smaller than that for November, 1919, which was 569,484 tons, but was 40,000 tons greater than the 478,066 tons for November, 1918, and 26,000 tons more than the 492,975 tons monthly average for 1917, 1918 and 1919.

A survey of the statistics on causes for loss of output shows that 34 mills were completely closed down during the month, and that in addition other mills lost 155,232 work hours. Of this loss no less than 90,130 hours were lost on account of lack of orders. Repairs accounted for the loss of 30,327 hours, lack of labor for 342 hours, and lack of coal, water, power, etc., for 34,433 hours. The paper board industry lost the largest number of hours on account of poor business, 38,222 hours; the tissue mills lost 17,671 hours.

The following is a table of monthly comparisons aggregate tonnage:

	Tons.
November	518,144
October	621,964
September	643,018
August	654,158
July	658,518
June	657,322
May	645,413
April	634,402
March	641,343
February	654,500
January	650,293

Stocks of paper on hand increased during the month from 173,980 to 192,843 tons, a gain of about 19,000. This was but 9,000 tons above the stocks at the end of November, 1919, 3,000 above those for November, 1918, and 32,000 tons less than the average monthly holdings for 1917-18-19.

Stocks of all grades except news print, increased during the month. Stocks of all grades reported by manufacturers at the end of November amounted to 196,627 tons, including the stocks at terminal and delivery points. In addition to these stocks, jobbers and publishers reported news print stock and tonnage in transit aggregating 239,213 tons.

Comparing the stocks on hand at the domestic mills on November 30, with their average daily production for 1917, 1918 and 1919, the figures show that:

News print paper mill stocks equal less than 5 days' average output, book paper mill stocks equal about 8 days' average output, paper board mill stocks equal about 8 days' average output, wrapping paper mill stocks equal about 11 days' average output, bag paper mill stocks equal about 5 days' average output, fine paper mill stocks equal slightly less than 28 days' average output, tissue paper mill stocks equal slightly less than 18 days' average output, hanging paper mill stocks equal slightly more than 9 days' average output, felts and building paper mill stocks equal about 15 days average output, miscellaneous paper mill stocks equal slightly more than 21 days' average output, total paper mill stocks of all grades equal about 10 days' average output.

TECHNICAL ASSOCIATION NEWS.

Dr. Otto Kress, chairman of the Committee on Dyestuffs of the Technical Association of the Pulp and Paper Industry, who has been in charge of the section of pulp and paper at the Forest Products Laboratory, Madison, Wis., for several years past, will resign from the service early in the new year. He has accepted a responsible position with the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wisconsin, in which he expects to be kept very busy. The duties of his new position will prevent him from doing any work as chairman of the Dyestuffs Committee, and he has asked to be relieved and that a successor be appointed. The matter is now under consideration by President Hatch.

The Committee on Abstracts of Literature of the Technical Association, under Ross Campbell, American Writing Paper Company, Holyoke, Mass., chairman, is planning to have future abstracts published and indexed in the issues of Technical Association Papers. In co-operation with the Technical Section of the Canadian Pulp and Paper Association, the committee has covered practically all of the literature of interest to the paper industry since the time it was organized. To show how the work of the committee has grown, it may be mentioned that during the last quarter of 1918 about eight magazine pages of abstracts were published; fourteen pages appeared during 1919, and during the first three quarters of 1920 seventeen pages were printed.

Some interesting developments are promised by the Committee on Sulphite Pulp, of which W. E. Byron Baker, York Haven Paper Company, York Haven, Pa., is chairman. Mr. Baker is continuing work on the sulphite process along the lines indicated in his paper on the "Control of Sulphite Cooking" read at the last annual meeting of the association in New York. He hopes also to do some work on the recovery of by-products and will perhaps include some of these results in the annual reports of the committee. Mr. Baker has been giving some attention to the development of the new method of testing sulphite liquor so as to obtain a more complete and correct analysis. It is likely that some of his associates on the committee will collaborate with him in the work. Arrangements have been made for the translation from the Swedish for publication in Technical Association Papers of articles dealing with a variety of interesting subjects connected mainly with the utilization of sulphite waste liquors and sulphite cooking.

It is likely that the work of the Committee on Heat, Light and Power for report at the annual meeting next April will be confined to such subjects as "Pulverized Fuel" and "Steam Economy." A symposium on "Steam Economy" would, no doubt, bring out considerable discussion, as the subject is one that is almost unlimited in its scope. In regard to the question of "Pulverized Fuel," this is one on which little experimental data are available, and it may not elicit the same general discussion as the subject of "Steam Economy."

The Committee on Groundwood or Mechanical Pulp, of of which W. A. Munro of the Wisconsin River Paper and Pulp Company, Stevens Point, Wis., is chairman, has announced that it will discuss at the annual meeting next April "The Hall Process of Grinding Wood" which has been attracting considerable notice for some time past.

UNITED STATES NOTES

Leading forestry experts from all parts of the country and other interested parties met recently in Albany, N.Y. and formulated a program for forest fire prevention, reforestation and the elimination of all wastes that seriously threaten the supply of standing timber. The conference brought together State foresters, deans of Schools of Forestry and lumbermen, as well as wood and paper manufacturers. It was decided that the Federal Government should be called upon to take an active part in forest fire prevention. In view of the annual loss through fires of over $20,000,000 worth of standing timber Congress is to be asked to appropriate $1,000,000 for forest fire prevention, the allotment to each State being determined by the amount appropriated by the State itself for this purpose. The program called also for the formation of a National Forest Fire Prevention Committee which is to consist of five or more members from each State, representing the forestry profession, lumbering, wood-using and farming industries and organizations of commercial interests, women's clubs and similar associations. The purposes of this committee will be to inform the public concerning the need of a national forest fire prevention policy and to secure Federal and State legislation to that end. An executive committee was chosen, composed of the following: Geo. D. Pratt, New York Conservation Commissioner, chairman; H. A. Reynolds, Massachusetts Forestry Association, secretary; Col. Henry S. Graves, former United States Forester; Wm. T. Cox, State Forester, Minnesota, and J. E. Rhodes of the Southern Pine Association, New Orleans.

Salary bonuses amounting to more than $100,000 were given as Christmas presents to the employees of the Columbus (Ohio) "Despatch" and the "Ohio State Journal" and other employees of Robert F. and Harry P. Wolfe of Columbus. The bonuses covered the six months' period ending January 1, and were the second granted during the year.

Ferdinand Thum, inventor of "Tangle foot" sticky fly paper, died last week at his home, Passadena, Cal. Mr. Thum was 65 years old and many times a millionaire. He perfected his invention several decades ago in Grand Rapids, Mich.

Paper salesmen of the New England States will meet this Friday at a dinner to be given by their association at the Exchange Club in Boston. An interesting program has been arranged by the committee which includes the showing of an educational film picturing the process of paper-making from pulp wood to the printing press. This reel of film is being loaned for the occasion by the International Paper Company.

Boston paper men had an opportunity last week to view the United States Department of Commerce exhibit of paper clothing which has already been shown elsewhere in the country since being brought over from Germany and Austria some weeks ago. Included in this exhibit are suits, trousers, overcoats, collars, aprons, raincoats, table-covers, rugs, laundry bags and other personal appurtenances. An exhibition of a similar nature has been opened to the paper trade by the J. L. N. Smythe Company of Philadelphia at the Smythe warehouse. This company has the exclusive agency in the United States for Windowphany, the paper used as a stained glass substitute. The articles shown in the exhibit in Philadelphia comprise numerous innovations in the line of paper substitutes for cloth. Manager C. L. Morian, who collected the exhibits during a recent trip in Europe, says that abroad these articles are not mere specimens of paper possibilities, but that, on the contrary, they have been serving as articles of commerce. Among the various specimens in Mr. Morian's collection is a bolt of paper cloth of beautiful blue color, looking very much like high grade burlap. A piece of this cloth was soaked in water over night and then dried on a steam radiator. It lost none of its strength or color. This cloth is utilized in the making of many useful as well as artistic products. It is the purpose of the Smythe firm in showing these paper fabric commodities to encourage American manufacture of similar articles.

The new mill of the Alaska Pulp and Paper Company at Snettisham has been completed and is preparing to turn out its first ground wood pulp, according to reports received by the Alaska bureau of the Seattle Chamber of Commerce. Further development plans, calling for the instalment of another mill five times the size of the present unit, will enable the company to turn out probably within the present year, at least 100 tons of pulp daily.

The Snell Forestry bill, which embraces substantially the recommendations of the wood using industries and interests chiefly concerned in forest conservation, was introduced in Congress just prior to the holiday recess. According to W. B. Bullock, who is assisting Secretary Kellogg of the Newsprint Service Bureau and Dr. Baker of the American Pulp and Paper Association in the promotion of this legislation, the bills progressing very satisfactorily.

Employees of the J. W. Butler Paper Company, Chicago, were presented with Christmas bonuses averaging about 30 per cent of their salaries. In addition to this, employees of the corporation branch were made gifts of free insurance policies ranging from $500 to $3000.

The Federal Power Commission has filed applications for permits looking toward the development of more than 12,000,000 horse power, sufficient to supply twenty cities the size of Chicago. Completion of the contemplated plans shown in the applications, the commission estimates, will advance water power development in the United States by more than 40 per cent, and will involve an investment of $1,200,000,000.

C. S. Battle, one of the leading timber men in British Columbia, was quoted in Seattle papers last week as saying that American engineers, representing financial interests of New York, Chicago and Buffalo, are investigating the pulp manufacturing possibilities in British Columbia with the object of investing from eight to ten million dollars in the pulp industry there. The investment would represent the taking over of five billion feet of the best stumpage of the province, Mr. Battle is reported to have said.

PULP AND PAPER NEWS

The plant of the Mattagami Pulp & Paper Company at Smooth Rock Falls has been closed down for a few weeks. According to a despatch from Cochrane average wages for bushmen then will be cut to $40 per month and board, this representing a considerable decrease in the scale formerly paid.

Mr. Alex. Buntin, of the Buntin Reid Company, Limited, Toronto, is spending a few weeks at Atlantic City.

The Ontario Division of the American Pulp and Paper Mill Superintendents Association will meet at the Clifton Hotel, Niagara Falls, on January 8th for the purpose of inaugurating the Ontario Division and the election and installation of officers. Among the addresses to be given are "Industrial relations in the Canadian pulp and paper industry", by Mr. A. P. Costigane; "The new conception of the purposes of industry ", by Mr. Robert B. Wolf; "The conservation of heat units in the drying of paper" by Mr. F. C. Farnsworth, and "The development of the Fourdrinier machine" by Mr. Stuart D. Lansing. "A good deal of interest in the coming meeting has already been developed and a large attendance is expected.

Twenty-five sales department heads of the Copp-Clark Company enjoyed their annual social reunion and dinner at the Carls-Rite Hotel during Christmas week when there was a general exchange of ideas for 1921. Mr. H. L. Thompson, president of the company, presided.

The Dominion Envelope & Cartons, Limited, has been granted incorporation, with head office at Toronto and a capital stock of $1,000,000. The company is authorized to manufacture and deal in all kinds of paper, box-boards, envelopes, cartons, packages, boxes, bags, etc. Among the incorporators are F. A. Dewey, C. H. Bowyer, H. G. Smith and J. F. Boland, all of Toronto.

The Miller Bros. Company, Limited, has been granted Dominion incorporation with power to deal in and manufacture box-board, straw-board, wood pulp boards, bookbinders, board, etc., with a capital stock of $1,000,000 and the chief place of business Montreal. Among the incorporators are R. T. Heneker, H. N. Chauvin, Jean Martineau, T. S. Shearer Stewart and I. L. MacCallum.

At a recent meeting in St. Catharines, of the Lincoln Paper Mills Company, Limited, Vice-President A. S. Woodruff was appointed President in succession to the late W. D. Woodruff, whose death took place a couple of weeks ago. Dr. Thomas A. Woodruff was made Vice-President and Mrs. W. D. Woodruff was added to the Board of Directors.

In a fire that occurred in the building of the E. B. Shuttleworth Chemical Company, Victoria and Dundas Streets, Toronto, on December 24th, Hodder & Stoughton, the Musson Book Co., Ltd., and the Church Bible and Prayer Book Company , publishers, suffered severely. The building was entirely destroyed and while the loss was great most of it was covered by insurance.

W. J. Reynolds, foreman of the Brockville Record and Times, Brockville, Ont., has just celebrated his 47th anniversary as a member of the staff, never having been on any other paper. This is a record not surpassed, it is believed, by any other publication employee in Canada.

Walter C. Nichol, proprietor of the Province, Vancouver, and a former Toronto newspaper man, has been appointed Lieutenant-Governor of British Columbia.

Mr. W. F. V. Atkinson, of the Dryden Pulp and Paper Company, Dryden, Ont., who spent the Christmas holidays in Toronto states that 40,000 cords of pulpwood are being taken out by the organization this year. Some 700 men are engaged in the work and the wages paid are from $50 to $60 a month.

Howard Smith Paper Mills, Ltd., have just sent out a new folder showing printing effects in two and three colors on their principal lines of book papers: Bard of Avon, Byronic Book, De Luxe, Sea Gull, Louvain, and Velour Art. The first two are shown with deckle edge. Several different finishes are illustrated.

Big Wood Harvest.

Fifty thousand cords of pulp wood from the timber limits of the Meigs Pulpwood Company and allied interests in the Gaspe Peninsula, Province of Quebec, will be brought into this country through the part of Oswego by the Cornwall Terminal Company next year according to plans now being made. Of the entire amount 20,000 cords will be shipped out of Oswego by the Cornwall Terminal Company to mills in this State and the remaining 30,000 cords will go to a large mill in Pennsylvania.

High Prices For Pulp Wood.

Kingston, Ont. — Farmers from all sections of the Calabogie district have been busy since the opening of the sleighing season drawing pulpwood to Kingston, Ont. The first car was billed through to the big mill at Ticonderoga, New York. Any farmer who was fortunate enough to make a contract last winter for the year's output is paid $14 a cord, while those who waited in the hope of an increase in price, receive only $12. The freight on a car of pulpwood to the New York plant is $125 or about $8 a cord so that the wood delivered at the mill costs the manufacturer about $25 a cord, one reason for the excessive price of paper.

Papermakers' Union Fight To Open Shop.

The opposition of Eagle Lodge of Papermakers to the move of the Crocker-McElwain Company and the Chemical Paper Manufacturing Company, of Holyoke, Mass., for open shops is to be strengthened by the appearance on the scene of President Jeremiah T. Carey of the Papermakers' International Union, who will go to that city to direct the fight.

R. F. McElwain, president of the two companies, lately announced an offer of individual contracts based on the open shop principle by which employes of five years' standing would be transferred from the payroll to the salary list.

Technical Section

REVIEW OF RECENT LITERATURE.

A-1. Progress in dendro-chemistry. H. O. CHUTE. Can. Chem. J., **4**, 217-28, (Aug. 1920). A review of the advances that have been made in the utilization of the products of the forest in Canada and the U. S. All chem. industries of the forest are by-products industries, or should be such, for nearly all woods are more valuable for timber and lumber than for their chem. products. The manuf. of ground wood, soda, sulfate and sulfite pulps are briefly described, and the other products of cellulose (esters, oxalic acid, etc.) are mentioned. N. America is unique in possessing the only deciduous tree that produces sugar in commercial quantities. The transformation of wood into sugars and alcohol has been known for over 100 yrs., but has only recently been successfully applied on a com. scale. The uses of the rarer gums and resins (Canada balsam, Oregon balsam, camphor, eucalyptol, oil of sweet birch, storax) are briefly dwelt upon, and also those of turpentine. The process of extg. tannins and dyeing exts. is described. The distn. of hardwood is described at some length, with special emphasis on the improvements initiated by the writer (U. S. patents No. 824,906, 835,501, (1906); 896,434, (1908).—A. P.-C.

A-1 Progress in dendro-chemistry. H. O. CHUTE. Can. Chem. J. 4, 217-28, (Aug. 1920); Paper, **27**, No. 6, 16-9, 28, (Oct. 13, 1920).—A.P.C.

A-1. Some observations on the determination of cellulose in wood. S. A. MAHOOD, Forest Products Lab., Madison, Wis. J. Ind. & Eng. Chem., **12**, 873-5, (Sept. 1920). A uniform size of particle is essential if comparable results are to be obtained in the detn. of cellulose in woods. Material which passes an 80-mesh standard (Am. Soc. of Civil Engineers) sieve, but is retained on a 100-mesh sieve has been found to be most satisfactory from the standpoint of both yield and manipulation. Material obtained by a single mechanical process of disintegration may give a sample on sifting which is not representative. To avoid this a combination of 2 processes, sawing and grinding, has been used. The procedure recommended by Sieber and Walter for chlorination gives a lower yield of cellulose than the original Cross and Bevan method, probably because of the higher temp. at which chlorination takes place. The modification of the Cross and Bevan method by Johnsen and Hovey appears to be of doubtful value.—A. P.-C.

A-1. Lignin. III. Preparation of a tannic acid from lignosulfonic acids. M. HONIG and W. FUCHS. Monatsh. Chem., **41**, 215-22, (1920); J. Soc. Chem. Ind., **39**, 718A, (Nov. 15, 1920). (See also Pulp & Paper, **18**, 1238. A-1, Dec. 2, 1920). The Ba salts of the fractions of the lignosulfonic acids are converted by boiling aqueous $Ba(OH)_2$ soln. into diff. insol. compds., which have not been identified, and a single sol. salt, $C_{18}H_{30}O_{10}SBa$, the acid corresponding to which has the character of a tannic acid of the catechu group with properties which are somewhat modified by the S content; when fused with KOH, it gives proto-catehuic acid in good yield.—A. P.-C.

A-3. Lignified and sub-lignified plants suitable for papermaking. CH. GROUD. Papier, **23**, 217-21, (Oct. 1920). A suggestion that various Fr. plants be utilized for papermaking and other purposes. Osier-peel is a rather strong fibrous material and contains an appreciable amount of tannin and of salicin (a glucoside used as a quinine substitute) which is easily extd. with boiling water. Heather, broom, and gorse grow very abundantly in France and are suitable for papermaking. Gorse contains 0.8 per cent of a diuretic resin, and also a poisonous alkaloid, cytisine, which is present in small amounts in the green portions of the plant and up to 2.5 per cent in the seed. Spanish broom (**Spartium jonceum**) is used in certain parts of Italy for the manuf. or very light hand-made textiles, cordages, and papers. If the fiber is prepd. mechanically it is neither long enough nor strong enough to be used as a textile but can be used for papermaking. —A. P.-C.

A-14; K-23. The yellowing of (photographic) copying paper and its method of prevention. F. FORMSTECHER. Phot. Rundsch., **56**, 75-7, 92-3, (1919); Chimie et Industrie, **4**, 510, (Oct. 1920). The author has investigated the causes of the yellowing which direct contact papers undergo in time, and has found out that H_2S, to which this deterioration is often ascribed, is but exceptionally the cause. All direct contact papers contain a complex of which the main constituents are AgCl and a soluble Ag salt. This complex blackens in the dark under the action of moisture. The pink coloration assumed in time by self-toning papers is of a similar nature. A slight yellowing of the paper completely disappears on fixing the proof. The yellow Ag is dissolved by the $Na_2S_2O_3$ and the oxidizing action of the air in the presence of CO_2. Moreover, in certain cases the free acid remaining in incompletely washed paper might suffice to dissolve the Ag_2O. Hence, a combined acid toning-fixing bath should be used for yellowed paper, as separate toning and fixing are useless. When the paper has turned considerably yellow it is unfit for use. The main condition requisite for yellowing is the presence of water, even though present in very minute amount, in the coating of the paper; for without water no chemical reaction can take place in the coating. This water comes principally from the paper on which the emulsion is coated, and it would therefore seem that the best way of preventing yellowing would be to eliminate the water as much as possible. This can be accomplished by packing the paper in air-tight metal containers containing $CaCl_2$. Not only is this method cumbersome, but it overdried the paper and renders it brittle. The following method is better and more practical. The sheets of paper are packed 2 by 2 with the sensitized faces in contact, and between each pair is interposed a thin paper, having a fiberless structure as far as possible. The main function of this paper is that of

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moisture regulator, and it must absorb moisture more readily than the sensitized paper. It must not give off any harmful substances and must be free from rosin, for rosin hastens the yellowing. A slightly alkaline reaction of the intercalated paper tends to prevent. The yellowing of copying paper and its method of prevention, yellowing, for which reason chemically pure tissue paper soaked in a soda solution was formerly used. Nowadays straw paper is used; it is free from rosin, slightly alkaline, but slightly hygroscopic, and does not store up actinic rays as does white paper.—A. P.-C.

A-15. The chemistry of cellulose and its compounds from the colloidal standpoint. GUSTAVUS J. ESSELEN Jr., A. D. Little, Inc. Chem. Met. Eng., **28**, 861-6, (Nov. 3, 1920). A concise descriptive summary of structure, electrical and general chemical properties, hydration, and oxycellulose; of the action of H_2SO_4, $ZnCl_2$, ammoniacal copper oxide, CS_2 and NaOH, HNO_3 and AcOH; together with a discussion of the viscosity of cellulose acetate solutions.—A. P.-C.

A-15. Accelerated method of estimating the reducing values of cellulosic substances. E. KNECHT and L. THOMPSON, J. Soc. Dyers and Col., **36**, 255-1, (1920); J. Soc. Chem. Ind., **39**, 718A, (Nov. 15, 1920). The Schwalbe method for detg. the Cu no. of oxycelluloses is modified by dissolving the pptd. Cu_2O in a ferric salt solution and estimating the ferrous salt so produced with $KMnO_4$. A confirmatory value is obtained by estimating the unreduced Cu in the filtrate with titanous chloride, and the diff. between the 2 values is equal to the Cu hydrate no. (unreduced Cu absorbed by all celluloses). The 2 methods give nearly identical results, which are slightly lower than that obtained by the original Schwalbe method. The possible effect which the alkalinity of Fehling's solution may have on oxycellulose may be avoided by heating the oxycellulose with a solution of $Cu(CNS)_2$ containing Na_2CO_3, treating the ppt. of CuCNS with warm NaOH, and estimating the Cu_2O so formed with a solution of ferric salt and $KMnO_4$. The method is less liable to error, but the Cu no. so obtained is slightly high. The Cu no. was shown to be a reliable criterion of the reducing power of cellulose, by heating oxycellulose with NaOH and rosinduline and then titrating with titanous chloride.—A. P.-C.

A-15; L-5. Preparation and properties of a highly oxidized cellulose. E. KNECHT and L. THOMPSON. J. Soc. Dyers and Col., **36**, 251-5, (1920); J. Soc. Chem. Ind., **39**, 718A, (Nov. 15, 1920). Previous methods for prepg. oxycellulose are open to criticism, since it takes no account of its decomposition by alkalis into non-reducing substances, and its hydrolysis by acids. An oxycellulose is obtained by treating filter paper with an acid solution of $KMnO_4$ (either 1 or 2 atoms of 0 to 1 mol. of $C_6H_{10}O_5$), washing the brown powder so formed, decolorizing with H_2O_2, and drying at a temperature not exceeding 40 deg. C. This oxycellulose has strong reducing power, especially in the presence of alkalis, and reduces methylene blue, safranine, rosinduline, indigo, and indanthrene in the presence of NoOH. Thus, the formation of oxycellulose may acct. for the well-known bleeding of indanthrene and vat colors during kier boiling. It reduces solutions of Ag, Cu'', and Ferric salts. With NH_3 and $NaHSO_3$ it forms unstable compounds. A strong yellow color develops with NaOH, and on neutralizing the solution and acid cellulose is pptd. which has only slightly reducing power. It is not possible to estimate oxycellulose by means of its reaction with p-nitrophenylhydrazine, since only adsorption compounds are formed. The new oxycellulose has a Cu no. of 14.2 as compared with 7.6 for Nastjukoff's bleaching powder oxycellulose.—A. P.-C.

E-0. Swedish sulfite pulp industry. Z. angew. Chem. Sept. 3, 1920; J. Soc. Chem. Ind., **39**, 341R, (Oct. 15, 1920). The production, which had fallen from 771,302 metric t. in 1916 to 476,307 t. in 1918, has now risen to 581,167 t., which represents 69 per cent of the normal. The demand for sulfite, especially on the part of the British paper manufacturers is good. The increased demand may be partly accounted for by the total absence of the Canadian supply, which is being wholly absorbed by the U. S. market.—A. P.-C.

F-0. The manufacture of pulp by the electrolysis of NaCl solutions. RAYMOND FOURNIER. Papier, **23**, 225-6, (Oct. 1920). The manufacture of pulp by the electrolysis of a NaCl solution is by no means new. It is mentioned by H. de Montessus de Ballore in his book on the manufacture of paper pulp (published 1913) and was patented by Karl Kellner. The process did not give good results, for there are certain difficulties which have not been overcome, the chief of which is as follows: when operating in the cold, the action of the Cl is satisfactory, but the NaOH is not sufficiently active; when operating at a high temperature, either with or without press. the action of the NaOH is satisfactory, but that of the Cl too energetic. (See also Fr. patent No. 503,749, G. A. Mourlaque, (Gironde), France, March 24, 1920. Papier, **23**, 151-2, (July 1920); Papeterie **42**, 691, (Aug. 10, 1920).—A. P.-C.

K-6. Results of laboratory tests by "Cellulose et Papiers" in connection with pulp and paper making. A. LECHATELIER. Chimie et Industrie, **4**, 529-42, (Oct. 1920). Preliminary tests made in June-Nov. 1916 showed the advisability of using material which could be treated without press. rather than wood. Over 10,000 tests have since been made on various materials from different parts of France, Northern Africa and the African coast, the total expenditure (including rent and overhead) being less than Frs. 60,000 a yr. The article briefly gives the conclusions arrived at as a result of tests on cooking, equipment, practical applications, cooking liquors, various raw materials (leaves, flax from the seed, flax waste, hemp waste, jute waste, etc., peat, palms, typhas, esparto, osier, etc.), mixtures of pulps, electric insulators from pulp, waterproofing of chemical pulps, oils, fats and waxes, plastic pulps, cellulose, machines.—A. P.-C.

K-14. Damper for super-calendered stock. JOHN GOODEY. Paper, **27**, No. 8, 22, (Oct. 27, 1920). Brief description, with diagram, of a brush and doctor which may be used as a damper for super-calendered paper and which could be fitted on American winders after the sheet passes the slitters.—A. P.-C.

R-1. Papermaking in Finland. A. SOLITANDER, Consul General of Finland. Paper, **27**, No. 8, 9-11, 19. (Oct. 27, 1920). A brief review of the forest resources of Finland, the effects of the Russian demands on its production, the effects of the War on its markets and production, and the present status of the ind. as regards production, equipment and organization.—A. P.-C.

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News From Our Advertisers

A History: 1842-1920.

Far back in 1642 Paul de Chomedy and his associates founded the City of Montreal. De Chomedy chose the site of Montreal with the vision with which great men are gifted. He saw what many were blind to—the rich possibilities of a city set in such environs. Yet at the close of the eighteen century Montreal numbered but twelve hundred houses. The streets were narrow, in the old world custom: the houses wholly of stone and iron-shuttered as a precaution against fire. Street lamps were unknown. The inhabitants stayed indoors from dark to dawn or sallied forth at their peril. There was no such thing as a police force. Not even the then European equivalent of a police—a night watch —patrolled the streets. But in the opening of the nineteenth century Montreal began to lay the strong foundations of future greatness. She began to come into her own, long since foretold by De Chomedy. Men began to recognize the commercial possibilities of Montreal. Among them were Mr. John McArthur and Mr. Alexander Ramsay, who founded the firm which later became McArthur, Irwin, Limited.

Five years after their establishment fire all but wiped the City out of existence. No less than eleven hundred houses in the heart of the City were razed. About the same time the ship fever carried off six thousand immigrants quartered in sheds at Point St. Charles. This was a terrible set-back for so young a community. But the men who established McArthur, Irwin, Limited were dauntless. They came of that stern stock that never dreams of hesitancy once the shoulder is set to the wheel. Hard work was nothing. Reverses came but to be conquered. They dreamed and worked for a firm, built by their own and their sons hands, with every difficulty mastered, that would be second to none. Their ambitions were more than realized as events have shown. The first location of this sturdy young firm was at the corner of St. James and McGill Streets, where the Imperial Bank of Canada now stands. The McArthur building of 1842 had thick stone walls, solid iron shutters, small windows and was lit at night by oil.

Railways had been inaugurated in Canada but a few years previous. The first ran from Laprairie to St. Johns, P.Q., and another short line connected Montreal to Lachine, where stages were available for New York and other points. Then the Grand Trunk line was completed from Portland to Longueuil in 1854, and so jubilant was the population of both cities that the citizens of Montreal literally entertained Portland en masse, and the citizens of Portland did likewise by Montreal.

As Victoria Bridge was still a dream, it was necessary to cross the St. Lawrence to reach the railway in Longueuil. In winter this was somewhat a perilous undertaking, especially with ice half-formed or breaking up. It was customary then to make the crossing in Indian dugouts, and many were the hairbreadth escapes from death. The career of Mr. John McArthur, father of his firm, was in grave danger of being cut off on such an occasion, when the dugout in which he was crossing was caught between grinding ice and violently flung on the ice pans. In course of time, Mr. John McArthur's son, Mr. James C. McArthur, entered the firm. At the early age of eighteen years he became a partner with his brother-in-law, Mr. Milton Pennington, Mr. James C. McArthur was obliged to seek emancipation from the courts in order that he might legally become a partner. Later, C. C. Corneille was added to the firm and the name McArthur, Corneille was continued for a number of years.

From St. James and McGill Streets the firm now moved to Lemoine Street: from there, with larger quarters imperative, they went to St. Sulpice Street; again they moved to De Bresoles Street and finally to St. Paul Street at the foot of St. Lawrence Main Street; where they remained until St. Lawrence Main was opened up to the waterfront, when they moved to quarters which McArthur, Irwin, Limited now occupy, 20-30 St. Paul St. and 21 and 31 Commissioners St. This present location is one of the oldest and most interesting of Montreal's landmarks. It dates far back to the days of the firm's inception, when walls were feet thick and floors were made to defy time. The rafters supporting the ground floor are cedar trees, hewn flat on one side, and the bark left on the balance of the log. The building has been modernized, but the heavy, solid stone structure, the wide-throated chimneys and massive rafters, tell their story plainly. The St. Paul Street buildings are used as sales offices, sample rooms and general offices.

McArthur, Irwin Limited, the modern realization of Mr. John McArthur's plan, was incorporated in 1912. The officers of the Company are: President: Mr. George Y. Chown, Kingston, Ont.; Vice-President and Managing Director: Mr. John Irwin; Director and Secretary-Treasurer: Mr. F. A. Bengough, Director, Mr. R. H. Monk.

For over fifty years the firm has been recognized as leading distributors for chemicals, aniline dyes, colors, paints, varnishes, glues, waxes, tanners' supplies and laundry supplies. Prominent among the foreign agencies represented are: McArthur & Co., Liverpool, England, Tanners' Supplies; John Lucas & Son, Philadelphia, Pa., Imperial French Greens; Sandoz Chemical Works, Switzerland, Aniline Dyes. The aggressive forward policy of McArthur, Irwin, Limited, which has always had as its goal the manufacture of all staple articles of the paint industry, has resulted in the establishment of factories at Commissioners Street, Montreal, for the fabrication of the famous CROWN DIAMOND line of Liquid Paints and Varnishes, at Britannia Street, Montreal, for the production of Chemicals and Dry Colors for the paint, ink, textile and paper trades, and at Outremont for the corrosion of Pig Lead and the manufacture of CROWN DIAMOND Pure White Lead, dry and in oil.

Through the institution of these three factories the jealously guarded reputation of McArthur, Irwin, Limited's products which have been known throughout Canada for dependable quality for generations has been adequately protected. The plants are equipped with the most modern machinery and are said to be without equal in the Dominion of Canada for efficiency and scientific control.

The position of McArthur, Irwin Limited is considerably strengthened by the affiliated companies, in which it holds the controlling interests. These subsidiary companies are: Miller Extract Co., Millerton, N.B., the only manufacturers of Hemlock Extract in the Dominion; The Davies, Irwin Limited, refiners of oil and waxes; Parker, Irwin, Limited, manufacturers of

(Continued on page 28.)

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, Dec. 30.—The week has shown no change in the pulp and paper situation. Generally speaking the trade is rather quiet, with large stocks of paper in the hands of the jobbers. Business in some lines, however, notably book papers, is keeping up well and wrapping and tissue paper dealers have little to complain of in the volume of business they are doing. Speculation is still rife, of course, as to the likely trend of trade and prices during the coming year, and although the feeling concerning the future is optimistic there are those who contend that if unemployment continues and American competition is reduced by a rising exchange rate, together with other possible contingencies, the Canadian paper market is bound to be adversely affected during the new year. Canadian publishers have been gradually raising their advertising and subscription rates and are preparing for further increases to meet the high cost of paper and other material and it is a question as to how near the present rates are to the point where advertisers will go no further. Papers are carrying large volumes of advertising now and much of this has to do with price reduction sales in many lines of merchandising. As a Toronto publisher pointed out, all this has a marked effect on the mind and temper of the merchant and the readers of papers. They believe that the peak of prices has been reached, and that any change made now should be in the direction of lessened prices. In such an atmosphere the advertising man has to go to the merchant now and explain his case, and it may be that he will have to go to his readers on a similar mission. That is what the Canadian daily publishers are facing now. Can they get more revenue for the same volume of business, or will they have to depend on increased business, which means increased mechanical expense in handling it? A provincial publisher pointed out that the price of newsprint had been fixed for the first three months of the new year at $130 a ton. Assuming that this price would prevail for the year, it meant that the publishers would have to pay thirty-three and a third per cent more for their white paper for 1921 than they did for 1920, since the average price for this year has been $100 a ton. Added to this is an increase of 40 per cent in freight charges. He added that the freight means an average increase for Western Ontario publishers of $2.50 per ton, this over and above the thirty-three and a third per cent. As the cost of paper is 44 per cent of the whole cost of producing a newspaper, this is going to be a big item, he said. On January 1st there is an increase of postage rates of 300 per cent and practically every publisher will have to face a decided increase in labor charges for next year. Every publisher is paying more for labor during the last three months of 1920 than he did during the first three months and there is no reason to believe that the rate will be lower next year. There is also the possibility of having to reduce the working time from forty-eight to forty-four hours.

These conditions in the publishing business are mentioned as showing the possible effect they may have on the paper trade generally. A weakness in pulp and paper stocks on the stock exchange was noticeable during the past week or ten days and the opinion prevails that this was due to the belief that in the new year there will be a large falling off in the demand for newsprint. The impression prevails that the consumption of newsprint will be retarded because of the high price and this may diminish newspaper circulation. If the period of heavy advertising the newspapers have enjoyed for some months is about to cease, as some believe, this will also have an adverse influence on the consumption of paper. On the other hand it is stated by some that the liquidation of stocks of merchandise will be carried on after the new year to a degree probably never before experienced. Whether such liquidation is called for or whether the goods can be replaced at the same price, is not regarded as the issue at the moment. What dominates the situation is the fact that the public is looking for lower prices and is not inclined to buy at present prices. Consequently, whatever the cost, the merchant would have to liquidate his merchandise and to carry out this liquidation in the most effective manner, advertising on an extensive scale would be carried out and this would call for a large increase in the consumption of newsprint. It is believed that some such situation will be in evidence during January and February and may go on until liquidation has been completed.

In connection with the newsprint situation a good deal of comment has been occasioned by a despatch from New York telling of a meeting between Canadian newsprint producers and United States publishers on the subject of newsprint prices for 1921, in which the prices already charged by the manufacturers were criticised and the possibility of large imports from Scandinavia referred to. The despatch is characterized as nonsense by those who are familiar with the details of the meeting, at which the difficulty of getting newsprint was acknowledged by the United States publishers, while the unsatisfactory character of the European product and the preference for Canadian newsprint were commented upon. According to officials of the Canadian Export Paper Company there is no chance of Europe being able to supply the shortage of newsprint and the situation, as it is at present, is particularly strong from the producer's standpoint. This is indicated by the fact that the company has enquiries for 100,000 tons at the present time which they cannot consider. One organization declares that it will not experiment any more with European news print and it is understood that the company has recently renewed contracts with one of the large producers on this continent. It is stated that the quality of the Scandinavian news print would not in any case be better than it was before the war, and actually is of a much inferior grade to the Canadian product. To attempt to change over from the strong Canadian material which they have been using for the past several years, to the weaker and flabbier paper from abroad that is reported to be coming into the competitive market, would be a rather expensive experiment for the publishers. Canadian paper has progressed in quality in the past five years and there has been no improvement in the foreign article according to paper experts. As to the new imports of paper, it is not believed that they are influencing the contract market for news print, although they appear to have effected a decline in the spot market, which was to have been expected, although it does not materially affect the situation as regards the Canadian product. It is believed in some circles that the prices of news print are now at their peak and that any changes the future may hold will be of a downward tendency.

PRICES BEGIN TO TUMBLE.—Rather sensational reduction is all lines of wrapping, kraft, toilet and tissue papers went into effect since the foregoing was put in type. Beginning on January 1st the following prices become effective, the quotations being for carload lots to jobbers:

White wrap 8½c. former price 10¾c; gray rag, 8½c. former price 10¾c; "B" manila, 9½c. former price 11c; No. 1 manila, 11½c, former price, 12½c; fibre, 10½c, former price 12c, kraft, both glazed and unglazed, has been reduced in carload lots to 11½c, former price 13c. On tissue papers there has been a decrease of 20 per cent. on bleached and 15 per cent. on all other grades. Toilet papers are down fifteen per cent; paper towels 16 per cent and paper napkins ten to fifteen cents per thousand. The knife has also been applied to paper bag prices and the discount increased by ten per cent. The following schedule of discounts now prevails in carload lots to jobbers; manila bags 35, 10, 10 and 5 per cent; plain, unglazed kraft bags, 50, 10 and 5 per cent. There is no change in S. O. S. white bags, which is the only line not affected.

A meeting of the manufacturers of book paper and the publishers of trade and class newspapers will be held in Toronto this week to discuss terms and prices for the coming year. The publishers contend that owing to the general trend of prices in other commodities there should be a lessening of present quotations for book paper. They set forth the claim that corresponding lines are sold very much cheaper across the border and in case an amicable arrangement cannot be reached it is understood that the publishers will apply to the Federal Parliament at the next session to have the present customs duty on book papers, imported from the United States, removed. The whole question will be gone into fully and the outcome is awaited with much interest.

BOARD PRICES DOWN. — Another reduction of twenty per cent has taken place in board prices. Straw and chip board are now selling at $80 as against the recent price of $108; vat lined $90 as against $120; filled board $116.50 as against $139.80; white vat-coated pulp-back $177; news-back $164.50. All pulp board is now quoted at $116 and folding at $131.

PULPWOOD.—The demand for pulpwood is quiet and mills across the line are not buying. A leading operator stated that there were several reasons for the present depression, among them being that owing to the high prices which prevailed and the scarcity during the first few months of the year, much more wood had been cut by the settlers and farmers in Ontario and Quebec than usual, while a large number of lumbermen had been turning their small logs into pulpwood which was a much more profitable proceeding than converting them into lumber at the present quotations. A number of concerns in the north have stopped buying pulpwood and offers of wood are coming daily from almost every quarter. There are at present no stable prices.

NEW YORK MARKETS.

New York, December 31—(Special Correspondence)—The most important development in the paper market during the final week of 1920 has been an improvement in inquiry for various grades of paper from a variety of consuming sources. Actual business has profited but little, if any, by the increased interest displayed by buyers, because those consumers asking for prices and offers have done so more with a view of getting a line on market conditions and values than with an intent to place orders just yet. At the same time, the expansion of inquiry has created a better undertone in the market, and has strengthened the belief of manufacturers and jobbers that demand for paper and board will broaden considerably soon after the turn of the year.

A great many mills have been closed down tight this week, which is but a common occurrence at this season, and paper manufacturers have devoted their major attention to compiling inventory and in making machinery repairs. Jobbers, too, are busy taking stock and putting their warehouses in shape for the new year, and one of the strong factors in the market is that offerings of paper of all kinds are of light volume. The average seller of paper is today pursuing a waiting policy, that is, waiting for customers to come to him for supplies. It is fully recognized that with buyers in their present frame of mind they can hardly be induced to absorb supplies unless in immediate need of fresh stock, and that if the need is pressing the buyer will not lose much time in looking for the paper.

On the eve of the new year it can be said that probably never before in a dull period such has as lately prevailed there has been an air of confidence regarding the outlook as pervades the paper trade at present.

If anyone is under the impression that paper manufacturers, mill agents or jobbers are pessimistic or dubious about the future, he only has to devote about five minutes of his time to talking to almost any member of the trade to learn that a feeling of calm optimism exists, with a majority of leading factors of the trade expressing the belief that the coming year will prove one of great activity and prosperity for the paper industry. Stocks of paper at consuming centres and in consuming plants are known to be light, and there is every confidence expressed that business in all lines will soon broaden, thus leading to an appreciable increase in paper consumption. The monthly report of the Federal Trade Commission on the paper industry for November, just issued, shows that production in that month was at a lower point than in any previous month this year, being no less than 150,000 net tons under the high water mark reached last July. This indicates that mills have decreased their output in proportion to the dropping off of demand, and would imply that stocks of paper at mills are not above normal, which should result in increased manufacturing activity as soon as the expected expansion of demand sets in.

There is no worthwhile change in prices to report. Practically all grades of paper are holding at about last noted levels, and every indication would seem to point to the market having touched bottom. Large

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users of paper, newspaper and periodical publishers and wholesale stationers in particular, are arranging contracts with mills for deliveries over the new year, and this constitutes the bulk of activity current. Spot buying is of routine scope only and has developed no fresh feature. Newsprint in rolls is bringing around 7 to 8 cents per pound in sales to the transient trade, and machine-finished book paper is selling in the open market for immediate delivery at 12 to 13 cents and on contract at 9½ to 10 cents. Boards are holding steady in price at $45 a ton at mills for chip and $50 for news board.

GROUND WOOD.—A decidedly firmer undertone is evident in the mechanical pulp market. Inquiry is reported to have speeded up, and representative dealers and importers say that some of their largest consumers are shopping about in an effort to learn what supplies of pulp are available and at what figures pulp can be bought. Prices have not advanced but they have tightened to a noticeable degree. Domestic ground wood of prime quality is held for at least $95 per ton at grinding mills and most sellers are asking $100, and sales reported at less than these prices involve only an odd carload or two which producers are anxious to move quickly. Foreign ground wood has sold at better than $85 a ton ex the dock at this port, and it is understood that most importers are demanding $90 for future deliveries of sizable tonnage. The entire complexion of the market is stronger, and it would appear that the predicted turn in the situation had about commenced.

CHEMICAL PULP.—Chemical wood pulp, too, is in a firmer market position. There is an undercurrent of demand which, while it has not developed into actual business, shows that papermakers are beginning to look after future requirements, and the increased interest evinced by buyers has prompted sellers to adopt different tactics and to hold firm for full quoted prices in practically every instance. Kraft pulp has strengthened in tone to a marked extent. Where offerings of this kind of pulp a short time ago were made at sharp concessions, today sellers are holding for at least $100 per ton on domestic kraft, with some producers reported having turned down bids of $110 on future commitments. Numerous contracts are being arranged covering deliveries of news grade sulphite over 1921 at $115 to $125 a ton at pulp mills, and importers who were recently inclined to sell foreign bleached sulphite at 9.50 cents a pound and less are now demanding 10 cents and higher, claiming that they can scarcely import No. 1 sulphite to sell at 10 cents at a profit for themselves.

Imports of pulp at the port of New York this week included 11,157 bales from Newcastle; 1,155 bales from Hamburg, and 2,175 bales from Rotterdam.

RAGS.—Although business in papermaking rags continues dull, there is an improved tone to the market due to the fact that consumers are displaying more interest. Dealers say that they could readily transact quite a large trade in rags for future delivery were they willing to book orders at prevailing prices, but few will sell stock on today's basis except for immediate shipment, it being their contention that if they must hold rags they prefer to hold them on their own account so as to be able to take advantage of any rise in the market that may occur after the first of the new year. Everyone in the packing trade is of the opinion that prices will advance as soon as demand from paper mills exerts itself, it being claimed that stocks are not above usual volume, that present collections throughout the country are light and that very few sizable amounts of rags are now being imported. Prices are holding at fairly steady levels. No. 1 white shirt cuttings are quoted to mills at 20 cents a pound f.o.b. shipping points, washables at 7.50 to 8 cents, fancy shirt cuttings at 10.50 to 11 cents, new unbleached muslins at 16.50 to 17 cents, old No. 1 repacked whites at 9 to 10 cents, repacked thirds and blues at 3 to 3.25 cents and roofing rags at a cent per pound for No. 1 packing.

Imports of rags at New York this week included 2,386 bales from Antwerp, 342 bales from Havre, and 564 bales from Belfast.

PAPER STOCK.—Aside from a further downtrend in prices on shavings there has been little change in the paper stock market. Demand continues narrow and apparently only the fact that values have sunk to levels where they are close to the cost of production are prices on low grades maintained. Prices have eased off to 5.50 cents per pound on No. 1 hard white and 4.50 on No. 1 soft white shavings, and purchases could probably be engineered in some quarters at still lower figures. Folded newspapers rule quotably steady at 60 to 65 cents per 100 pounds at shipping points, and No. 1 mixed papers are available at 35 to 40 cents. Old kraft paper is quoted at 3 cents a pound, white news cuttings at 3.25 to 3.50 cents, and No. 1 books and magazines at 1.40 to 1.60 cents.

OLD ROPE AND BAGGING.—The market is nearly devoid of orders for old rope and bagging and there is very little trading in these commodities. Quotations are easy and it is a question just how low buyers can obtain supplies.

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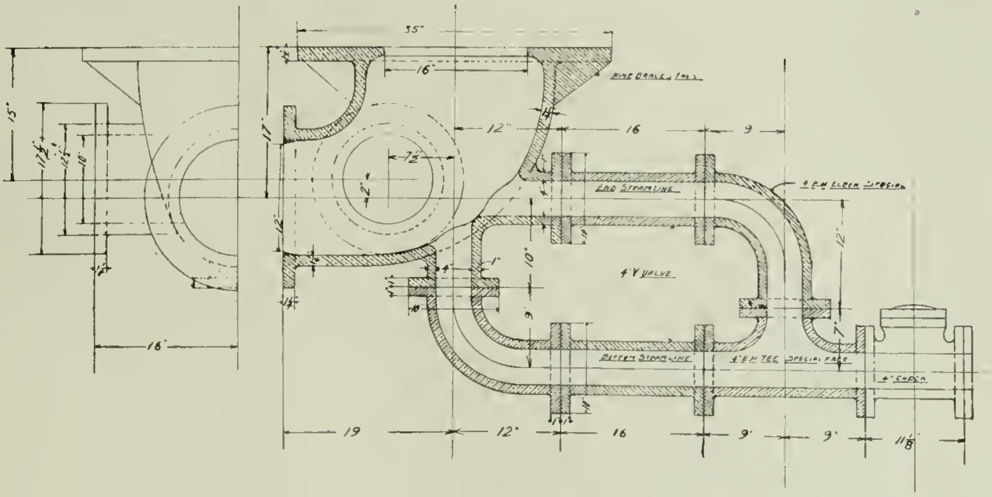

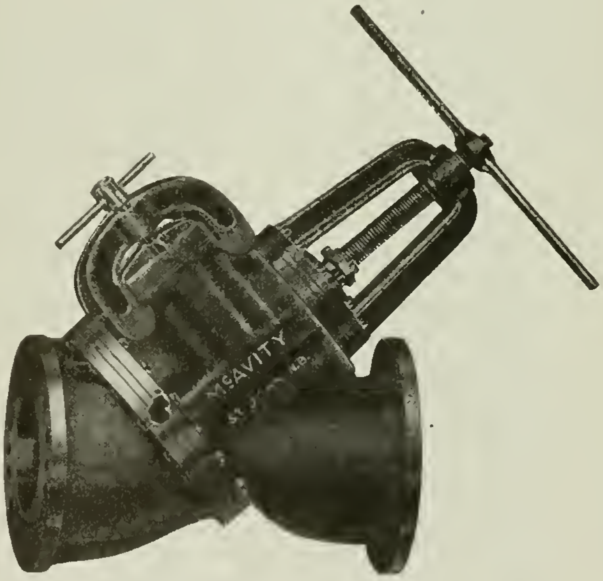

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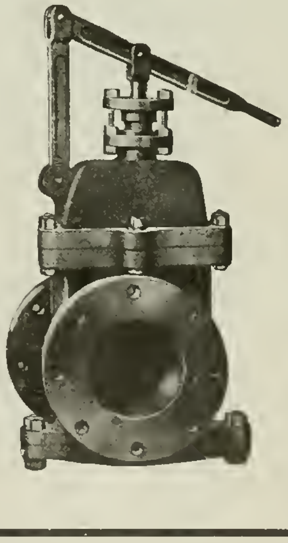

NEWS FROM OUR ADVERTISERS.

(Continued from page 22.)

leather dressings, polishes and shoe findings. The latest addition to the list is the Laporte, Irwin Limited, recently formed to manufacture peroxide of hydrogen and blanc fixe for the Canadian markets. The Vice-President and Managing Director, Mr. John Irwin, has entire charge of the business. Indeed, it is largely due to his untiring energy that the firm has prospered so well since incorporation in 1912. Mr. Irwin is a Canadian born at Kingston, Ont., and like his predecessors in the business he is zealous in his country's interests. The motto of the firm is "Expansion through co-operation," and never was a motto more faithfully lived up to or a firm more loyal and welded than McArthur, Irwin Limited is to-day.

U. S. WOOD PULP PRODUCTION FOR NOVEMBER.

The following is a tabulation of the production, producing it, and stocks of finished pulp, in tons of 2,000 pounds on an air-dry basis, for November 1920.

	Number of mills.	On hand first of month.	Production for month.	On hand end of month.
Ground Wood Pulp	161	94,150	139,535	108,529
Sulphite, News Grade	63	17,139	70,888	17,043
Sulphite, Bleached	32	4,448	49,932	4,381
Sulphite, Easy Bleaching	6	761	4,821	1,192
Sulphite Mitscherlich	7	1,142	6,930	1,627
Sulphate Pulp	21	4,758	16,518	7,075
Soda Pulp	28	5,826	37,076	6,938
Other than Wood Pulp	4	238	341	192
Total for All Grades	—	128,462	326,041	146,968

Total stocks of all grades of pulp in the mills on November 30 amounted to 146,968 tons. Mill stocks of news grades sulphite, bleached sulphite and other than wood pulp decreased during the month. All other grades increased.

Ratio of Stocks to Average Production.

Comparing the stocks on hand at the domestic pulp mills at the end of the month with their average daily production based on the reports covering the years 1917, 1918, and 1919, the figures show that ground wood pulp wood stocks equal slightly less than 24 days' average output; new grades sulphite mill stocks equal slightly more than 7 days' average output; bleached sulphite mill stocks equal slightly less than 3 days' average output; easy bleaching sulphite mill stocks equal slightly less than 5 days' average output; Mitcherlich sulphite mill stocks equal slightly more than 6 days' average output; sulphate mill stocks equal slightly less than 15 days' average output; soda pulp mill stocks equal slightly less than 6 days' average output; mill stocks of "other than wood pulp" equal about 5 days' average output; total mill stocks of all grades equal slightly less than 14 days' average output.

Loss of Production

The idle machine time of grinders and digesters reported to the Commission for the month of November, 1920, is shown in detail in the attached tabulation. The lost time is compiled from the following operating reports: Ground Wood Pulp, 96 companies operating 132 mills and 921 machines; News Grade Sulphite, 44 companies operating 56 mills and 172 machines; Bleached Sulphite, 23 companies operating 25 mills and 110 machines; Easy Bleaching Sulphite, 6 companies operating 6 mills and 22 machines; Mitscherlich Sulphite, 7 companies operating 7 mills and 46 machines; Sulphate Pulp, 17 companies operating 17 mills and 64 machines; Soda Pulp, 21 companies operating 27 mills and 181 machines; Other Grades, 2 companies operating 2 mills and 4 machines. The reasons tabulated for lost time are lack of labor and repairs. "Other Reasons" include lack of wood, lack of water power, etc. The time lost in November, 1919, is shown by grades and reasons for purpose of comparison. These figures do not include 8 mills which were not in operation.—Federal Trade Commission.

IMPORTANCE OF WOODS END RECOGNIZED.

The importance of the woods end of the paper industry was emphasized by the organization of the Woodlands Section of the American Paper and Pulp Association, at the Fall Business Conference of this Association at Chicago.

Membership in the Section is open to Woods Superintendents, Logging Engineers, Foresters and others directly employed by pulp and paper manufacturers in the acquisition, exchange, management and exploitation of timber or timberlands; and to forestry students and others interested in the woods end of the paper industry.

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PROTECTING POPLAR TREES FROM BORERS.

Experts of the United States Department of Agriculture claim that they have found a means of controlling, if not entirely eliminating, the aspen borer. This is the gray-green beetle which often destroys whole plantations of trees that are so essential to the soda pulp industry. The fast growing poplars and aspen trees have been particularly subject to the attacks of this insect pest. In some areas where poplar and aspen predominate, the standing dead, fallen and dying trees exceed 50 per cent. of the total stand. Two methods of controlling the insect have been devised as the result of experiments conducted by department experts in various localities. The first of these consists in destroying the insect by cutting the brood trees. Brood trees are individual trees attacked several years in succession and are readily identified by the scarred trunks and deformed branches. These are the breeding points of the borer, and a man with an axe can cut and pile fifty such trees in a day. The trees are piled and burned or split open so that the wood is exposed to the sun. The other method, not practical in the forest, but applicable to shade trees, is the application of creosote or carbolineum to the egg scars. This should be done in October after the adults have deposited their eggs.

The top of the driving pulley should run towards the driven pulley, not away from it. This means that the pull will be from the bottom and the slack side above. If the greatest tension is from the top the arc of contact is lowered and a great deal of power wasted.

"Better cause a delay than an accident," says the Safety League.

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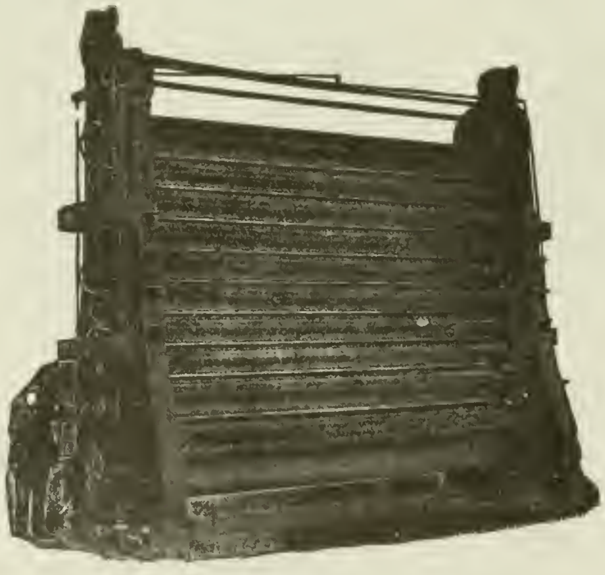

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Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XVIX. GARDENVALE, P. Que., January 13th, 1921. No. 2

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J. NEWELL STEPHENSON, M.S., Editor.

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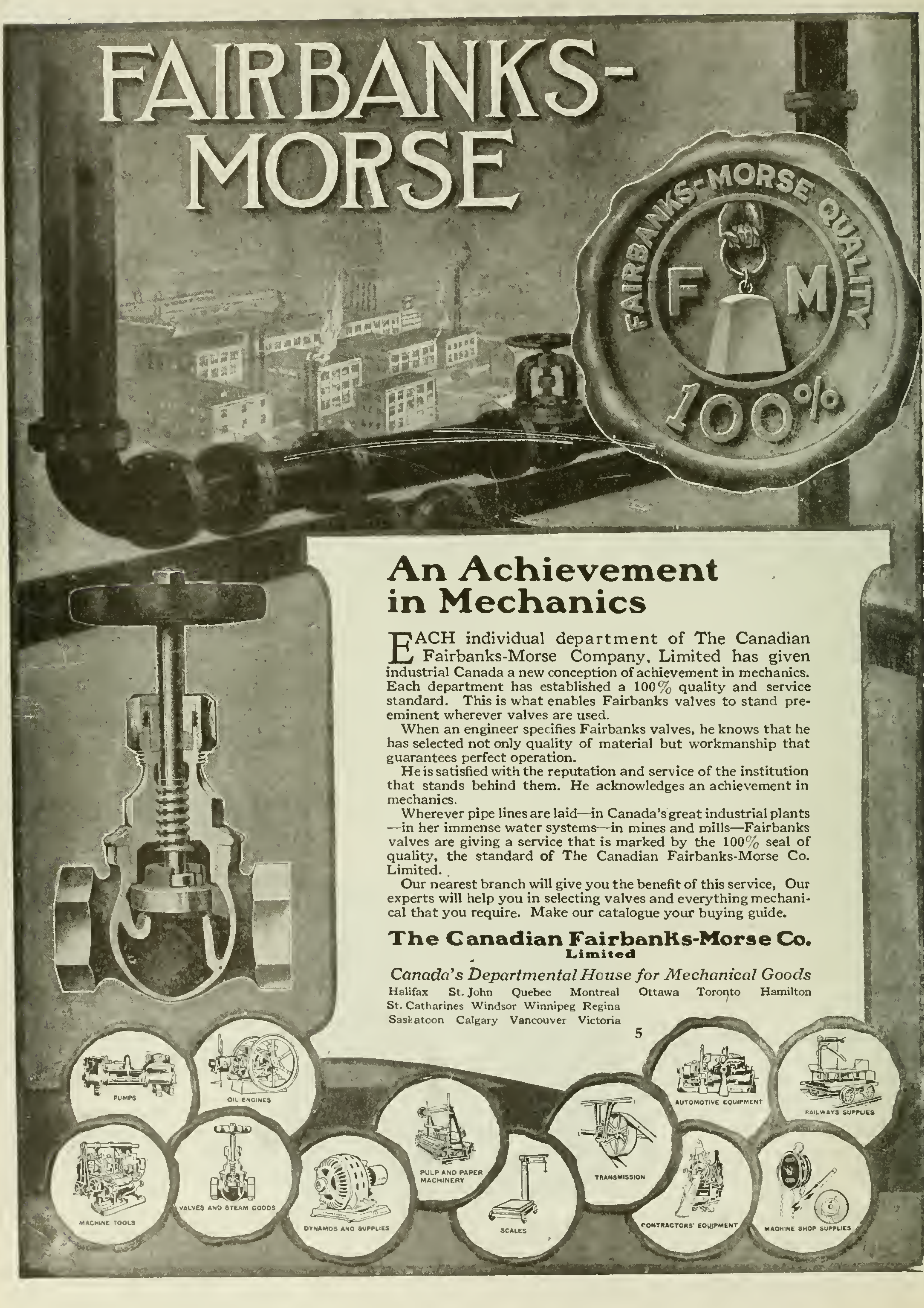

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EDITORIAL

BEGINNING AT THE BEGINNING.

The lesson that the pulp and paper industry seems to find the greatest difficulty in learning is that efficiency should begin at the beginning. The beginning of this industry is the forest, which apparently is just coming to be properly realized. The reason probably lies in the large excess of available timber over current requirements and the condition of relatively recent days when the forest had to be cleared to make room for farms and towns. There has come a great change since those days, and concerns that once left on the ground many saw logs with only slight defects are now glad to get a good bite for the saw. Localities that once were prosperous saw mill towns are now deserted hamlets. Some pulp mills would follow their sad example except for the greater sacrifice or expense of moving the more costly equipment. The forest frontier has receded till the transportation of raw material has become so expensive a matter as to render some mills almost unprofitable.

These things could have been foreseen and provided for, but they were not. The good ship has struck a rock. The problem now is to repair the damage and henceforth to sail in a safer channel.

Our methods of paper making and pulp manufacture came originally from Europe and many of our machines likewise. Why not make equally good use of what Europe has learned respecting the handling of the forest, the back-bone of our whole industry. Encouraging signs are to be seen and Canada is blazing the way. Our mills are beginning to realize that the great success of the chemical men and scientific management in the mills in perfecting processes and improving equipment is like building a house on the sands unless there be a sure supply of raw material for the mill. That is why the Forest Protective Associations, Society of Forest Engineers, Woodlands Section, etc. have been established.

It is significant that the Canadian Pulp and Paper Association, along with others dependent on the forest have been in the forefront of real conservation measures and movements. No country's prosperity more immediately hangs on the condition of her natural resources, than Canada's, and no industry is more concerned than the manufacturers of pulp and paper. The forest must be preserved.

These organizations for the preservation of the forest meet at the Windsor Hotel, Montreal, next Wednesday and Thursday, Jan. 19 & 20. The Imperial Forestry Conference in England, last summer, emphasized the importance of Canada's forests and forest industries in the markets of the world. Those who have any interest in their perpetuation and success should attend these meetings. A mill cannot operate at all without raw material and cannot operate profitably without cheap raw material. We are now headed for a condition where, before long, wood at our mills will cost as much as finished pulp in Russia or Scandinavia.

A donkey will pull his load in a vain effort to reach the bundle of hay held just out of his reach. Our industry has a responsibility to discharge, a burden to carry for the world. Let us keep the fodder for our mills within reach. That is what the Woodlands Section is for and that is why every member should be at the meetings next week.

THE CIVILISING EFFECT OF WORK.

We had the pleasure of hearing the other day, an interesting talk on the subject of Neo-Paganism. This was defined as the paganism of the present day and the speaker showed that there is a distinct tendency for many of the characteristics of pagan times to reappear in modern life. One of the most striking is the disinclination to work. A feature of ancient days was the prevalence of slavery. In eastern countries the slaves were chiefly from conquered nations. Among the Indians the slaves were the women. The reason for slavery was the idea that work is degrading. One of the principal effects of Christ's life was that He made work dignified and honorable. He worked, the apostles worked, the early disciples worked, and the Scriptures contain numerous references to the dignity of, and the necessity for work. People are naturally lazy but they cannot perform the function for which they came into the world nor discharge their obligations to their Maker without working.

One of the disturbing signs of the present time is the growing dislike for, and disinclination to work. Mention was made of a case where the delivery of an order was greatly delayed and an explanation was given by describing a singular but somewhat typical but perhaps unusual incident which was said to have occurred in a big manufacturing plant. A piece of metal was to be turned on a lathe, the operator started to pick it up when he was told that he must not do that as there was a helper for such work. The helper refused to lift it because it was considered a laborer's work and finally the piece was put in place after the loss of an hour and a half. It does appear to be serious when distaste for work is combined with organised discouragement of those who are willing to exert themselves.

Surely there is nothing more honorable, more helpful, or more rich in satisfaction than work. Success depends on it, happiness depends on it, and even the stability and life of each nation depend on willingness to work and the effectiveness of the work of everyone who is able to do so. The continuation of a condition where the tendency is continually to shorten hours and to do less work in those hours, or as the speaker referred to put it, to begin the day when the whistle blows to quit, is to invite economic disaster. The world is done with slavery and the best way to prevent its recurrence is for each to do his share of work.

COBWEBS.

The editor appreciates the penknife and good wishes of Canadian Fairbanks-Morse, Ltd. It is much more convenient that the pocket tool-chest we have heretofore had to carry.

The Pulp and Paper Magazine is honored by having quoted in the 1921 Diary of Gottesman & Co., a short history of sulphite pulp manufacture from the article by H. G. Spear, in our International Number, 1920. Brief descriptions of several pulp making processes are taken from the Handbook issued by the Canadian Pulp & Paper Association.

A friend who is a grammatical and etymological specialist says we made a mistake last week in the use of the word "consistency" as applied to paper stock, as that word is an abstract from referring to an attitude of mind. It is, apparently, often misused, therefore, in the paper and pulp mill, where consistence, density or concentration would be correct.

An Irishman once said, "Ye can't believe half of what ye see in the newspapers and the rest is a damn lie." That seems to be the case with the note in our issue of December 30, regarding the Kingston Whig and the E. B. Eddy Co. The latter informs us that "the Appelate Division at Osgoode Hall dismissed the Kingston Whig's appeal as well as the cross appeal with costs."

The Chemistry of Pulp and Paper Making is the title of a book by Edwin Sutermeister, one of the first copies of which has just been received by the Editor. We have followed its preparation with great interest and hope that it has the large sale it deserves. A review will be published in an early issue.

It was unfortunately necessary to postpone printing the interesting account of the Meeting of the Association of Paper Mill Superintendents which were held last Saturday.

THE CARELESS SMOKER.

(With Apologies to Kipling).

Note.—The American Forestry Association calls attention to the fact that the forest fires in this country burn ten times the area of devastated France every year.

A fool there was and his pipe he lit
(Even as you and I),
On a forest trail where the leaves were fit
To become a blaze from the smallest bit
Of spark—and the fool, he furnished it
(Even as you and I).

The forest was burned to its very roots,
Even beneath the ground,
With the flowers, the birds and the poor dumb brutes.
Old hoary oaks, and the tender shoots
Which might have made logs but for such galoots,
Allowed to wander round.

The lumberjack has now passed on,
His pay-day comes no more,
And the screech-owls haunt the camp at dawn
Where the cook's tin pan woke the men of brawn;
But the mill is silent, the trees are gone,
From the soil and forest floor.

A deadly sight are those hills of rocks
Which once were beds of green;
No hope for the human, no food for the flocks;
The floods must be held by expensive locks,
While the harbor is silted to the docks—
The ships no more are seen.

But the fool smokes on in the forest still,
Leaves camp-fires burning too,
While the patient public pays the bill
And the nation's wealth is destroyed for nil.
If the law doesn't get him, the devil will—
Smoker, it's up to you!

—*The Pathfinder.*

Editor's Note: The man who wrote this poem does not owe any apology to anyone. We only wish that a few of the fools who are killing our forest industries might take it to heart.

PULP PRICES DROP A BIT.

Toronto.—The demand for pulp of all kinds is rather quiet at the present time as consumers do not care to load up with large stocks in view of the uncertain and downward trend in the price of all lines of paper. Groundwood is quite plentiful and is commanding from $70 to $95 at the mill, according to grade, shipping facilities, freight rates, etc. Strong, natural sulphite is selling at from $133 to $140 and bleached sulphite at $160 to $165 at the mill, with news grade as low as $95 and $100. Sulphate pulp is quoted at $125. The mills, it is understood, have quite a stock on hand of all kinds of pulp and are proceeding conservatively. It is though that war prices are gone for good and as manufacturing costs are bound to come down, pulp prices will not touch the exalted figure which they commanded during the first few months of the past year.

Moving Pictures showing river driving scenes on the St. Maurice River, taken by the Laurentide Pulp and Paper Co., and lent for the occasion, provided the entertainment for the members of the Engineering Institute, Montreal Branch, on Thursday, Jan. 6th.

Canada's Pulp and Paper Industry in 1920

By A. L. DAWE, Secretary, and EDWARD BECK, of the Pulp and Paper Association of Canada.

(Compiled from Annual Review Numbers of the
Montreal Gazette and Toronto Globe.)

The year 1920 has been notable in the annals of the pulp and paper industry of Canada for the number of new enterprises planned or actually begun and whose completion is destined to emphasize still more the value of this industry to the industrial and commercial life of Canada. The year has also been marked by the expansion of a number of the old-fashioned companies and by a very general capital reorganization made necessary by such expansion.

All the mills were employed at top capacity for the first ten months of the year, although some slackening has since taken place in come lines owing to a slight decrease in orders due to hesitancy on the part of buyers to purchase in what they believe to be a declining market. The general breakdown in exchange has hampered exports to some extent. Low water conditions during the final quarter of the year also served to restrict production.

The cost of raw materials has ruled abnormally high throughout the year, while wages have also risen to a new high level. Since most of the raw materials entering into the manufacture of pulp and paper are, of necessity, bought many months in advance of their consumption, immediately liquidation in the price of the finished product is not altogether feasible.

Export demand for the higher grades of pulp and for newsprint paper has exceeded the supply throughout the year, and, despite the exchange difficulties already alluded to, exports of these commodities have greatly exceeded, both in value and volume, those of any previous year.

A Period of Readjustment.

The period of industrial readjustment through which Canada, in common with most countries, is passing finds the pulp and paper industry confronted with the usual number of difficulties but determined to meet and overcome them. Deflation of market price, now common in many lines, has not as yet materially affected commodities dependent upon this basic industry, the chief reason being that the principal raw materials entering into the manufacture of pulp and paper products have to be obtained many months in advance of their actual use in manufacturing. Pulpwood is cut, driven and stored from one to two years before it actually reaches the grinders, coal is bought a year in advance, and the other materials employed in producing paper also have to be provided months beforehand. Pulp and paper now in process of manufacture are the result, for the most part, of purchases of raw materials made at peak prices and little reduction in selling price can be anticipated until this high cost material is used up. Labor also, so far, shows little indication of receding in cost, although woodsmen are more plentiful and less exacting in their demands.

Demand Begins to Slacken.

The abnormal demand for paper, especially of newsprint and book, which contributed greatly to the well-being of the industry during the past two years is undoubtedly beginning to decline. This will naturally affect conditions in the future.

The breakdown in international exchange is also having an adverse effect on foreign selling of Canadian pulp and paper in more ways than one. Some countries, such as Australia, are now without bank credits in Canada and the difficulty of doing business with them is enormously increased, even though they may still be anxious to obtain Canadian products. The exceedingly high value of American funds as compared with most European currencies has given the paper-manufacturers in Germany, Sweden, Norway and Finland a marked advantage in the American market, even when the difference between Canadian and United States exchange is taken into account.

Notwithstanding those obstacles, however, Canadian papermakers are, for the most part, still operating their plants at full capacity and finding a market for their output. Expansion of the industry, which was seriously retarded during the war years, is going forward at a rate which must within a short time establish Canada still more firmly as one of the world's principal paper-producing countries.

Exports of pulp and paper for the first eleven months of the calendar year—January to November inclusive—reached a total value of $148,515,899, compared with $87,370,262 during the same months last year. They were made up as follows:—

1920.	Paper.	Chem. pulp.	Mech. pulp.	Total.
January	$5,519,718	$ 2,658,974	$ 972,574	$ 9,151,268
February	6,304,388	2,615,156	474,383	9,391,927
March	7,231,207	3,875,281	562,308	11,668,796
April	4,729,354	2,936,683	506,369	8,172,356
May	6,939,346	4,318,972	779,710	12,038,028
June	7,877,740	6,254,409	2,136,767	16,268,916
July	6,877,014	6,608,740	2,528,993	16,014,747
August	6,746,817	6,702,644	2,809,266	18,258,727
September	7,855,493	6,758,156	1,877,053	16,490,702
October	8,128,254	6,590,944	1,986,807	16,706,005
November	7,897,465	5,440,780	1,016,184	14,354,429
Total	$78,106,796	54,760,689	$15,648,414	$148,515,899

U. S. Best Customer.

The United States continues to be Canada's best customer. During the first seven months of the current fiscal year. Canada's paper exports were distributed as follows: United States. $40,067,276; United Kingdom, $2,811,561; Other countries, $8,275,181. Woodpulp exports—United States, $43,281,562; United Kingdom, $6,193,991; Other countries. $3,319,910.

Despite much agitation in favor of conserving Canada's raw materials and converting them into finished products in this country. a large amount of unmanufactured pulpwood is still leaving the Dominion. In the seven months' period above referred to Canada exported 778,246 cords of wood. valued at $9,556,255, to the United States.

Over $300,000,000 Invested.

Statistics of the industry now indicate a capital investment of well over $300,000,000 and an annual output exceeding $225,000,000 in value. The consumption of pulpwood this year is estimated at 3,500,000 cords. exclusive of over 1,000,000 cords exported to the United States. Large increases are shown in the volume of sulphite, sulphate and groundwood pulp produced. Paper and paper products. particularly newsprint. also show a gratifying increase, held back, to a slight extent, by unfavorable water conditions at some of the mills during October and November.

Company Reorganizations and Incorporations.

Expansion of the industry has brought about the formation of a number of new companies, as well as the reorganization of the older ones.

The Abitibi Power & Paper Company, Limited, recalled its $5,000,000 share capital, issued on the basis of $100 par value, and re-issued it in the form of 250,000 shares of no par value, or five new shares for each one of the original issue.

The Laurentide Company, Limited, increased its outstanding share capital from $9,600,000 to $28,800,000. retaining the par value of $100 a share and giving to each shareholder three shares of new stock for each share of the old.

Price. Bros. & Company, Limited. declared a stock dividend of 22% early in the year, increasing their capital by this means from $5,000,000 to $8,540,000. The company has also one through a process of reorganization under which shareholders in the original company are entitled to receive five shares in the reorganized company for each share of the old. the par value of the shares remaining at $100 each.

The Brompton Pulp & Paper Company, Limited, reissued its $7,000,000 outstanding capital on the basis of two shares for one of no par value and placed the new shares on a 7% dividend basis. The company has also been authorized by its shareholders to issue an additional 70,000 shares of new stock at its pleasure.

The Provincial Paper Mills, Limited, was reorganized to take over the Provincial Paper Mills, Limited, and the Port Arthur Paper Company. its outstanding capital being increased to $3,500,000 common shares, and $1,700,000 preferred, on the basis of three shares of new stock for one of old.

The Howard Smith Paper Mills, Limited, reissued its old outstanding common stock of $1,062,500 on the basis of two for one and bought it up to $2,500,000 par value.

The Wayagamack Pulp & Paper Company, Limited, increased its outstanding 50,000 shares each of $100 par value to 250,000 shares of no par value, giving to each shareholder two shares of new for one share of old, and offered 50,000 shares ratably to shareholders, retaining 100,000 additional shares in the treasury for possible future needs.

The Dryden Pulp & Paper Company, of Dryden, Ont., was taken over by the Dryden Paper Company, Limited, the new company being capitalized by an issue of $405,000 10-year 6% bonds, $1,100,000 30-year 6% debentures and 100,000 shares of common stock of no par value, issued at a nominal price of $35 a share.

One of the most important developments of the year was the official announcement that the International Paper Company of New York, whose new pulp and paper mills at Three Rivers, Que., are now well on the way to completion, will shortly begin the erection of a second pulp and paper plant in Canada, presumably in New Brunswick, where the company already owns extensive timber leases and important power rights.

Price Brothers & Company's projected development of a large paper mill and a new industrial community a few miles east of Chicoutimi, on the Saguenay river, to be known as "Saguenay," plans for which were definitely announced last fall, has been retarded by the inability to get deliveries of paper mill machinery from Great Britain. The preliminary plans have all been perfected, however, and, it is understood, construction work will begin in due time. The completion of this undertaking will place this company in the ranks of the world's largest paper producers, giving it a daily output of about 800 tons of newsprint paper alone in addition to numerous other products.

The Three Rivers Pulp & Paper Company, Limited, was incorporated under the Dominion Companies Act and capitalized at $4,000,000. This company, whose head office is in Montreal, is now building a 100-ton pulp mill at Three Rivers, Que., which is expected to be in operation in November, 1921.

The Manouan Pulp & Paper Company, Limited, organized with a Dominion charter, has an authorized capital of $7,500,000, of which $6,900,000 has been issued. This company is building a 100-ton groundwood pulp mill on the St. Maurice river at Weymontechegne, above La Tuque, Que., which is expected to come into operation in April next.

The St. Regis Paper Company, Limited, of Canada, a subsidiary company of the St. Regis Paper Company of America, has been organized. It is owned and operated by the same interests as the parent company and is capitalized at $1,600,000. Of the total capitalization, $1,500,000 is in preferred stock, of which $1,000,000 is to be used for additional working capital and there will be $100,000 in common stock without par value. All the stock is to be owned by the St. Regis Paper Company of America. The company starts business with $1,600,000 paid in. The business of this company will be to furnish Canadian pulpwood from its freehold lands to the American company and its mills at Deferiet, Herrings and Black River. An extensive operation is now under way in the Champlain and St. Maurice districts in the province of Quebec, and a much larger operation will be started in the Saguenay districts.

Expansions and Improvements.

General expansions and improvements now under way are summarized by provinces as follows:—

Ontario.

Cornwall.—Howard Smith Paper Mills, Limited, increasing their bleached sulphite pulp output to 50 tons daily.

Port Arthur.—Port Arthur Pulp & Paper Company, Limited, taken over by the Provincial Paper Mills, Limited, of Toronto, extensions and improvements under way, including the addition of a 40-ton paper mill.

Port Arthur.—Kaministiquia Pulp & Paper Company, Limited, acquires timber limits and mill site for the erection of a new pulp mill, announced to have 250 tons daily capacity.

Fort William.—Fort William Pulp & Paper Company, Limited, erecting a new $3,000,000 pulp and paper mill on the mission property at the mouth of the Mission River, Fort William, to produce 120 tons of groundwood pulp and 100 tons of newsprint daily. Pulp mill now nearing completion.

Nipigon.—Nipigon Fibre and Paper Mills, Limited, erecting 40-ton pulp mill.

Kenora.—Lake of the Woods Pulp & Paper Company granted certain power concessions upon undertaking to erect a pulp and paper mill.

Frankford.—Canadian Paper Board Company erecting new pulp mill of 25-ton daily capacity and to follow with a 60-ton board mill.

Kapuskasing.—Kimberly-Clark Co., of Neenah, Wis., take over the Spruce Falls Pulp & Paper Company and commence building groundwood and sulphite plants, each with a 75-ton daily capacity, to be followed with a three-machine newsprint mill of 150-ton capacity.

Thorold.—Interlake Tissue Mills, Limited, erects a new addition for the manufacture of tissue papers.

Cornwall.—Niagara Wall Board Company of Buffalo, N.Y., takes over the Ross & Co., mill to manufacture wall board and heavy paper specialties.

Dryden.—Dryden Pulp & Paper Company, Limited, enlarging its plant from a total daily production of 70 tons of sulphate pulp and kraft paper to 170 tons.

Sturgeon Falls.—Spanish River Pulp & Paper Mills, Limited, installing new paper machine of 55 tons daily capacity, bringing their total output to 650 tons daily.

Strathcona.—Strathcona Paper Company installs new building paper machines and otherwise adds to its equipment.

Thorold.—Ontario Paper Company, Limited, installing new 50-ton newsprint machine.

Iroquois Falls.—Abitibi Power & Paper Company installing three new newsprint machines of 230 tons daily capacity, increasing their daily output to 460 tons.

Quebec.

Chandler.—Saguenay Pulp & Paper Company's mill increased output from 80 to 130 tons a day.

Grand'Mere.—Laurentide Company, Limited, installs two new newsprint machines with a daily capacity of 150 tons, giving a total daily output of about 350 tons of newsprint and 60 tons of board. Company has also acquired extensive additional pulpwood limits.

Quebec.—Hammermill Paper Company of Erie, Pa., buys the Matane Lumber & Development Railway, with timber lands, mill site, river improvements, etc., for the purpose of erecting pulp and paper mills.

Clarke City.—Gulf Pulp & Paper Company taken over by the Imperial Paper Mills of London, Eng., in association with the Amalgamated Press, Limited, and plans announced for increasing its output.

Crabtree.—Howard Smith Paper Mills, Limited, adding a new paper machine which will increase their output of high-grade writing paper from their two mills to 100 tons daily.

Kenogami.—Price Bros. & Co., Limited, adding a new 50-ton newsprint machine, increasing their newsprint output to 300 tons daily.

Three Rivers.—International Paper Company mills now under construction to produce 200 tons of pulp and 200 tons of paper daily.

East Angus.—Brompton Pulp & Paper Company, Limited, now constructing a new groundwood mill of 100 tons daily capacity. This company has recently acquired an additional tract of land comprising 90,000 acres and estimated to contain 1,100,000 cords of pulpwood.

Shawinigan Falls.—Belgo-Canadian Pulp & Paper Company, Limited, building new groundwood mill of 40-ton daily capacity and making other extensive additions to its plant.

Three Rivers.—Wayagamack Pulp & Paper Company, Limited, installing four new kraft paper machines, capable of producing about 12 tons a day each, bringing its total kraft production up to 100 to 115 tons a day. This company recently added 2,000 square miles to its timber limits.

New Brunswick.

Glen Falls.—Former automobile factory taken over by Clarke Bros.' Paper Mills, Limited, to be converted into a paper box and fibre shipping case manufactory.

St. George.—St. George Pulp & Paper Company taken over by the New York World Publishing Company of New York. Plans announced for increasing output of groundwood pulp from 20 to 100 tons daily.

Andover.—Fraser Companies, Limited, announce plans for construction of new pulp and paper mills at Tobique Narrows, near this place.

Nova Scotia.

Wolfville.—New pulp mill in course of erection for the Gaspereau River Light, Heat & Power Company, to make 8 to 10 tons of dry groundwood pulp daily.

Bear River.—Clarke Bros., Limited, extending their pulp mill from a 30 to a 50-ton daily capacity.

British Columbia.

Beaver Cove (Vancouver Island). — Beaver Cove Lumber and Pulp Company, Limited, extending its plant so as to increase its output of sulphate pulp from 30 to 60 tons a day; planning to add a paper mill plant capable of producing 200 tons of newsprint and 100 tons of kraft paper.

Prince George.—Eastern Canadian and American capitalists announce plans for a $6,000,000 plant to produce various grades of paper.

HEAD OF DOMINION PAPER CO., DEAD.

Mr. Frank Paterson Currie, died in Montreal last Thursday at the age of 81, following a long illness from heart trouble. Mr. Currie came to Canada from Lanarkshire, Scotland, in 1862, and since that time has resided in Montreal. He was president of the Dominion Paper Company, Limited, and of the W. and F. P. Currie Company, Limited. Apart from business pursuits, Mr. Currie was a life governor of the Montreal General Hospital, and of the Protestant Hospital for the Insane. He was a member of the Board of Trade and of St. Andrew's Society. He is survived by his widow, one son, T. S. Currie, and four daughters.

News From Europe

THE RE-MANUFACTURE OF WASTE PAPERS.

(Pappen- und Holzstoff-Zeitung, Nov. 25 and Dec, 2, 1920.)

Although in most cases old papers are delivered already sorted by the wholesalers and sorting establishments, it is advisable—particularly in the case of printed paper—to carry out a second sorting, in order to remove possible admixtures of coloring matters. In the case of papers with printing and writing on them, it is often necessary to subject the material to dusting in patented machines. This is especially true of old business papers, deeds, ledgers, etc., since these, as experience shows, collect and hold large quantities of fine dust.

The machines consist principally of a long conveyer which feeds the stock into a cutter where it is defibered and finely divided. It is then transferred to a duster or a fan where the dust and the heavy and fine particles are eliminated. The long conveyer which introduces the paper into the cutter enables workmen, who stand on both sides of the delivery railway, to sort out by hand colored papers, impurities, shavings, sawdust, plaster, glass, board, etc.

In most respects the cutter works like the rag-cutter, but it has some new features. It unwinds by a peculiar whirling motion, untwisting fibres, yarns, threads, rolls and bagging, removing dirt and impurities and tearing the strands apart. Behind the fan a platform is provided with a hood or cover; and means, preferably magnets, for attracting iron shavings, filings, nails, hooks, etc. Between the platform and the exhauster integral with it, a free space or compartment is formed in which the coarser and heavier impurities fall to the bottom. This exhauster sucks up the paper shavings and transfers them to the pulping room. But since the elevator of the exhauster has not sufficient power to suck up the heavier impurities that are not collected by the conveyer or eliminated by the fan, these heavy particles must fall to the bottom of the free middle compartment. But the lighter and finer impurities, like dust and sand, are removed in the duster.

Essentially simpler, but intended only for sorting and dusting, is the patented sorting machine (Ger. pat. 230,021). It consists chiefly of a perforated metal sheeting (screen), which hangs through an adjustable space in the traverse direction of the machine. The breadth of the sheeting amounts to 1-2 meters; its length to 4-10 meters and more. Underneath this metal sheeting a dust collecting chamber is provided. This sheeting is actuated with a shaking motion by means of the oscillator rods of two eccentrics geared into a common steel shaft. Owing to the oblique position of the screen, the oscillating movement causes the stock upon it to shoot upwards and forwards. Women, standing on both sides of the metal sheeting, remove the impurities, colored admixtures, etc., as the paper is tumbled out on the side by the jig-like motion. Sand and dust drop into the chamber underneath, from which they are sucked up by a powerful exhauster.

The conversion of old papers into pulp is a well-known process; of interest here are processes of removing ink and coloring matters, so that the pulp obtained will be white, and adapted to the manufacture of clean, white papers without previous treatment. To effect this solvents must be added to the pulp; such materials are a necessary part of the special appliances for removing dissolved ink and coloring matters. In some cases baths of various kinds are employed through which the paper is led by means of an endless belt or cloth. After passing through baths, such as oxalic acid and glycerin, potassium permanganate, lead acetate, and aluminum sulphate, the paper is compressed between rolls, and afterwards dried between heated rolls and glazed. These baths, however, are not likely to find much further application, at least in the remanufacture of old papers from pulp which is made into new paper in the machine; they are not without originality as means of restoring printed and written papers. All these baths are to make the paper fit for writing after drying and glazing. The process appears to be very detailed and expensive, involving labor beyond the results achieved.

In another patented process there is a device for washing the whole stuff and removing the dissolved ink. The paper is made into a suspension, opening up the fibres and dissolving the ink, so that it can be washed off without any loss of fibre. The fibres are washed on a screen, in the form of a cage or an endless wire, whereby the water is circulated from below upwards against the wire mesh. This operation enables the impurities to pass easily through the screen, while the loss of fibre is reduced to a minimum.

In patent 316,469 the cooked pulp is washed in soap solution in a vat, while hot water is introduced into the vessel from the bottom of a liquid supply chamber. The water flows away again at the top. Owing to this circulation of water, the fibres are maintained in an open state, so that the ink dissolved in the liquor separates easily from them, the color flowing away at the top with the water. The fibres then gradually fall to the bottom. When fresh hot water is introduced the disintegrated fibres are again forced upward. The process may be repeated as often as desired, and the washing continued, until all the ink has been removed.

According to patent 312,618 the waste paper is ground in a hollander and then introduced into stuff-chests provided with mixers. An alkaline solution is added in such strength that for each liter of water not more than 2 kg. of caustic soda, or an equivalent amount of other salts, is present. The solutions should have a temperature of from 45 to 65 C. The solution is then mixed thoroughly with the pulp and the fluid drawn off. The pulp is transferred to movable screens and washed with fresh, cold water, with the result that the residues of ink are completely eliminated.

In another process 100 kg. of old papers are alternately opened up in the hollander to a thick stuff by the addition of soda lye. The stuff is not ground, but beaten, the rolls being raised. The water is then removed from the pulp in a washing machine, in which the ink is completely dissolved and eliminated. Simultaneously the suspension of paper is sprayed for 10-20 minutes with fresh water. In this process not only is the ink removed, but also size and leading and a certain portion of the finest wood fibres are lost, involving a loss of 18-25 per cent, according to the grade of paper. A special feature of the process is the improvement of the fibres, for wood pulp acquires a property like pure cellulose through this method of treatment with lye.

Although these processes are designed to evolve a bright, transparent pulp out of old written and printed papers, the problem can hardly be regarded as fully solved. Progress is often slow and perfection is gained by knowing the successes and failures of others as well as one's self.

Fire Prevention in Pulpwood by Means of Artificial Fog

By F. J. HOXIE, Boston.

(Continued from last week.)

Wood is Filled With Cell Cavities Like a Honey Comb.

Wood is not an homogenous solid but when cut across the grain has the appearance of honey comb, the interior of the cells being filled with air in the case of wood below fiber saturation and the wood substance which forms the walls of the cells containing more or less water. When spruce wood contains about 30 per cent by weight of water the wood of the cell walls is just saturated. With from 30 to 65 per cent of moisture in spruce wood, water is found in the cell cavities. Figure 7 is a photo-micrograph of spruce cut across the grain showing clearly the air spaces or cell cavities and the wood substance separating them. The wood substance of the cell walls, like cotton, wool and silk, when below the fiber saturation point comes to equilibrium with the moisture in the surrounding air, taking up more or less water according to the relative humidity of the air, the wood absorbing water as the relative humidity increases and giving it up as it decreases. The amount absorbed varies somewhat for different woods but for the average relative humidity of out of doors air of about 65 per cent, spruce wood protected from the weather will contain from 6 to 12 per cent. of water. Above the fiber saturation point is a constant loss of moisture when the wood is exposed to the dry air. The rate of this loss depends on the relative humidity of the air. At the air saturation point of 100 per cent relative humidity, no water will be given up by the wood as it will be impossible for water to evaporate from the wood into an atmosphere already saturated with water. Rotten wood or punk wood apparently has a rather greater tendency to absorb water from a saturated atmosphere than sound wood, therefore such wood remains wet in a saturated atmosphere and also absorbs liquid water like a blotting paper far more quickly than sound wood. If the atmosphere surrounding a log pile can be kept at the saturation point there will be no tendency for the wet wood to dry out on the surface or for the wet punk wood to give up its moisture. The most practicable way to attain this desirable end is to keep the log pile continuously covered with a blanket of artificial fog consisting of very fine drops of water which float in the air and are carried by it over the log pile. This fog can be formed by spray nozzles which beat up water into fine droplets as shown in figures 8 and 9.

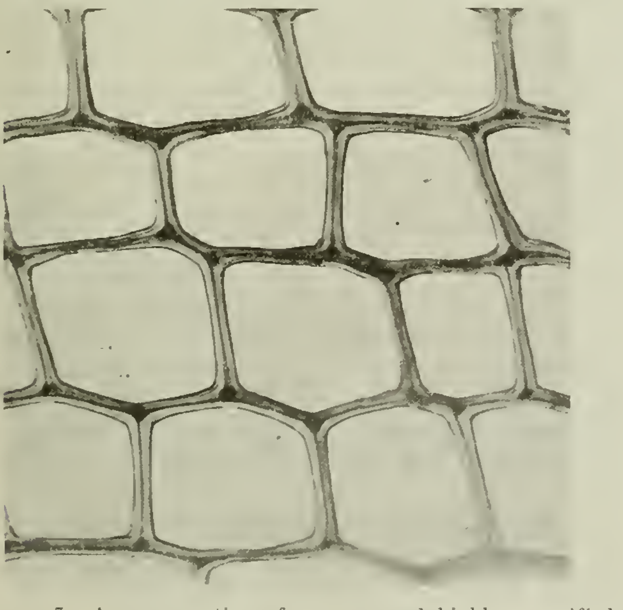
Figure 7.—A cross section of spruce wood highly magnified, showing the air-filled cell cavities and the thin honey-comb-like walls of wood separating them.

Figure 8.—Showing a spray nozzle discharging two gallons of water per minute at a pressure of 70 pounds. Very slight wind.

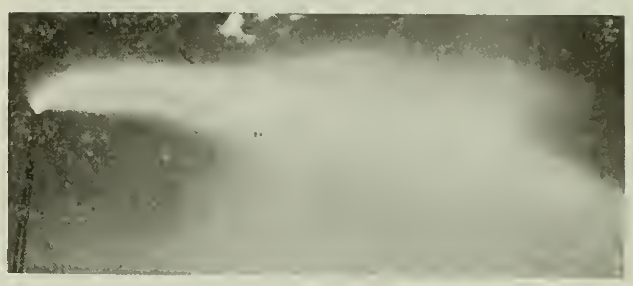
Figure 9.—Showing a spray nozzle discharging one quart of water per minute at a pressure of 70 pounds with summer afternoon breeze. Note fineness of spray and wide distribution.

In order to determine how much water will be required to maintain this atmospheric saturation over the pile, an approximate idea can be obtained from the average summer evaporation from the surface of ponds. Such data has been collected for different parts of the country by water works engineers and it shows an average evaporation in August for the eastern section of the United States and Canada of about four gallons of water per minute per acre. The average surface area of a 10,000 cord conical log pile is about 2½ acres which would therefore require about 12 gallons of water per minute to supply the August evaporation. With a factor of safety of 5 to provide for spray carried away by the wind and other losses and irregularities, 60 gallons of water per minute applied in fine spray should be sufficient to keep the pile continuously wet.

Several experiments are under way on this method of wetting. The object is, first, to keep the wood wet in order to prevent ignition by small sparks, and second, to keep the season cracks closed and the wood cells as nearly full of water as possible to slow down the rate of combustion as well as fungus activity. Exact figures on the upper moisture limits of fungus growths are lacking but, judging from the way that tank staves and moist roof planks rot through the middle there is an amount of moisture considerably short of absolute saturation or a water logged condition of about 65 per cent at which fungus growth is considerably retarded. See figures 10, 11 and 12.

The value of spray from a fire protection standpoint consists first, in keeping the punk wood in the pile, which is the common source of ignition too wet to ignite by means of small sparks. It will also have the advantage of keeping the surface of the pile so wet that if a fire should originate from exposure it would progress so slowly in its early stages as to give time to get hose streams or monitor nozzles into service. These should be conveniently located about the pile and on it so that large streams can be quickly directed on any point of its surface whatever the conditions of the wind. Most of the large log pile fires have occurred in summer weather indicating that the dryness of the wood is the important factor.

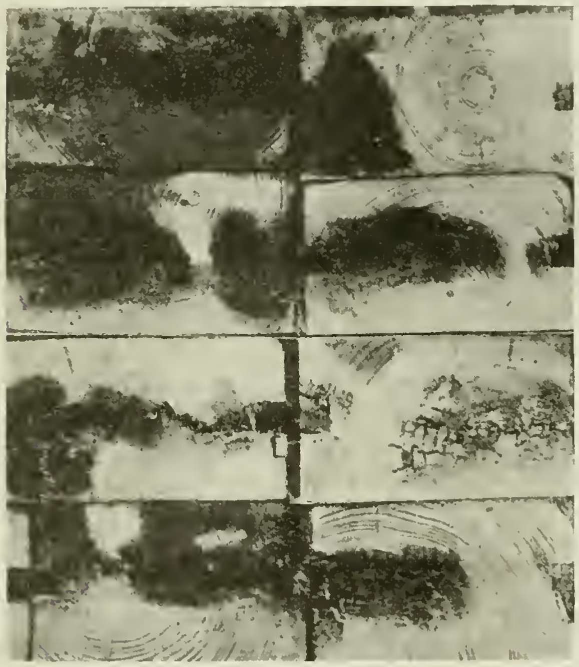

Figure 10.—Southern pine planks from a paper mill roof showing a well defined line of rotted wood through the center of the plank where the moisture was favorable for fungus growth. At the top it was too wet and at the bottom too dry.

It will be possible to install a monitor nozzle and spray nozzle system over log piles at a relatively small expense. This will be following the same methods that have been used with sprinkler and hydrant systems that have been in successful use for the fire protection of mills except that fire "prevention" by means of continuously operating open sprinklers will be expected to be more efficient than fire "extinguishing" by automatic sprinklers which are only brought into service after the fire starts.

On log piles put up by a stationary stacker this stacker can support the fire service pipe supplying monitor nozzles and also supplying the spray nozzle system. The spray heads deliver much less water than the automatic sprinkler, requiring not over ½ gallon per minute as compared with 20 gallons for the automatic sprinkler. This water can be supplied by ½" branch pipes for a common sized pile. A permanent system which suggests itself as highly practicable where fixed conveyors are in use, is to attach the ½" pipes to steel cables from the conveyor to the ground at a sufficient height above the log pile to prevent damage from the falling logs. the pipes being spaced about 30 feet apart along the conveyor with heads about 30 feet apart along the cables, these heads discharging ½ gallon per minute each.

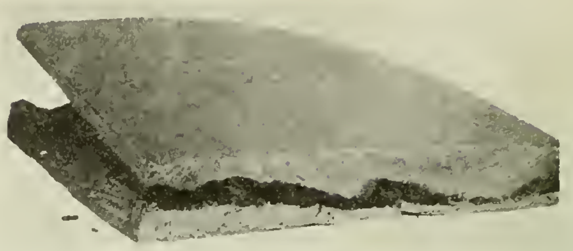

Figure 11.—Above showing plank from the bottom of a water tank rotted along a narrow line where the water content was favorable for fungus growth.

Where movable stackers are used the heads and monitor nozzles can be fed from a large fire service pipe supported on a plank runway resting on the logs at the top of the pile, and ½" pipes supplying the spray nozzles extending down the pile and resting on the wood. These pipes being put up as the pile is made and taken down as it is taken down. Spray heads should be selected which break the water into the finest possible spray so as to get the most efficient use and the best distribution. They should be located from 5 to 10 feet above the surface of the pile to get a satisfactory distribution, the wind being the important factor in distributing the water. The following photographs (figures 13 and 14) show spray nozzles variously spaced. Those in figure 14 are not high enough, hence the dry areas clearly visible between the heads.

Fire Prevention Better than Fire Extinguishing.

Fire prevention by means of water spray has far greater possibilities in preventing pulp wood losses than fire extinguishing. To extinguish a fire in a large pile of dry pulp wood when the fire is well under way, which is commonly within ten or fifteen minutes of the time it starts, is almost if not quite impossible. Each pound of wood will require a gallon of water to absorb the heat which it generates in complete combustion. The velocity of combustion in the large log piles which have been destroyed by fire has been surprisingly uniform. The variations appear to be more dependent on the water contained by the wood or the amount of oxygen contained in the surrounding air than the water applied in hose streams. Two of the slowest pulp wood fires burned 14,000 and 17,000 pounds of wood per minute. In the first case the wood contained in the neighborhood of 50 per cent of water and was fought with hose steams; in the second case the pile was ignited by a forest fire. The wood contained about the same amount of water and no hose streams were used, but the surrounding atmosphere was doubtless considerably impoverished in oxygen by the forest fire. A factor in the slowness of the first fire was doubtless the bark on the wood which somewhat clogged the spaces between the sticks and cut down

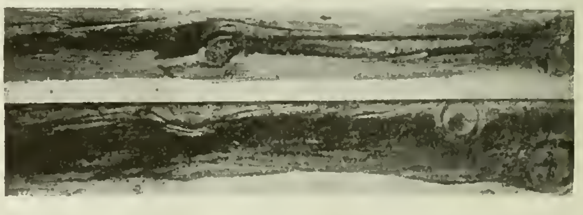

Figure 12.—Two spruce planks from a weaving mill roof. Note center of rotted wood with sound wood above and below where the moisture was too great and too little.

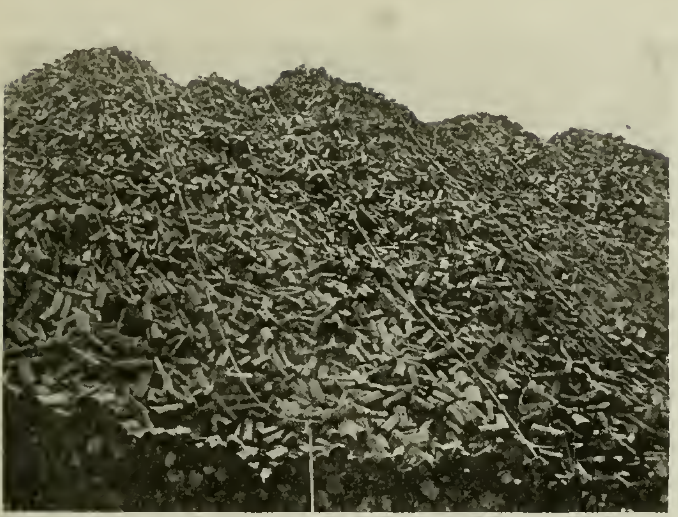

Figure 13.—Log pile continuously wet by spray nozzles, spaced 25 x 30 feet, made of brass ½ inch pipe caps with three 1-32 inch holes.

the draft. Two other large fires in which the wood was somewhat drier and free from bark burned at 25,000 and 28,000 pounds per minute with hose streams in continuous service, which shows a remarkably constant velocity. It also shows that it would be necessary to apply water to such a fire at a rate of about 30,000 gallons a minute with little effect until the wood was practically all burned. This demonstrates that when a large log pile is well under way it is impossible to stop it with any number of hose streams commonly available and that the only practicable means of avoiding serious loss is to keep the surface of the piles sufficiently wet to prevent them from becoming ignited and to have protective appliances instantly at hand to stop a fire in its early stages.

Spray nozzles requiring but a half gallon of water per 900 square feet of log pile surface can be used with effect on isolated log piles at railway sidings and in the woods where now no practicable form of protection is available. Sufficient water at the required pressure can be supplied by a wind mill and a tank or a small gasoline engine.

Conclusion.

Spray nozzles have undoubted possibilities for cheap and effective log pile protection.

Experiments are now underway at six large paper mills, at least, on the use of spray nozzles, the object being to determine the most effective spacing arrangement of piping and capacity of heads. Results thus far indicate that two quart heads as manufactured by the Spray Engineering Co., spaced 30 feet each way and elevated five feet above the surface of the pile, will give satisfactory service with a pressure of from 50 to 70 pounds at the head. ½" branch pipes feeding 5 to 8 heads appears to be large enough. The main feed pipes should be large to supply monitor nozzles and to keep down the water velocity to prevent earrying sediment in suspension which would clog the nozzles. Such wetting of large piles of wood, wet when stacked will not increase rotting but rather reduce it.

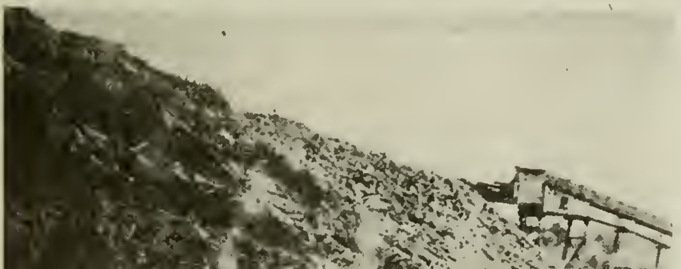

Figure 14.—Spray nozzles using 2 quarts of water per minute, each, spaced 30 feet each way. The surface is not quite covered, due to the unequal distribution from insufficient elevation. Very much better distribution was obtained by elevating the nozzles about 6 feet above the pile.

Wood which is to be kept kept dry had best be piled in low well separated piles with good hydrant protection.

Lake Superior Paper Co., open sprinklers in operation. (See note.) Three quarter inch pipe distributing system. Nozzles are ordinary pipe caps drilled with 1-32 inch holes.

Note:—The following paragraphs from the Quarterly of the National Association of Fire Underwriters, describe the open sprinkler protection for a pulpwood pile as employed by the Lake Superior Paper Co., Sault Ste. Marie, Canada.

The photographs on the opposite page (only one shown here) show an excellent application of open sprinkler protection for pulpwood storage—indirect forest preservation. This installation is along the lines suggested in Mr. F. J. Hoxie's article in the July "Quarterly," entitled "Log Piles: Their Hazards and Protection," but antedates the publication of this article, having been installed in June of this year.

This pile constitutes the entire storage of the company in this locality, and is reserved for winter use. The open sprinkler system shown is operated continuously during the summer months. The wood of this pile will not be removed until winter, and the piping is so arranged that when necessary it can be readily moved. The pile is eighty-five feet high, five hundred and forty feet long, has a maximum width of three hundred feet, and contains approximately thirty-two thousand cords. It is protected by a system of 3-inch feeder mains laid along and around the base of the pile, with ¾-inch pipes laid over the pile connected to these mains at about 20 foot intervals. These ¾-inch pipes are provided at 15 foot intervals with 18-inch extension nipples set vertically. Each nipple is capped with a pipe cap, perforated with four 1-32-inch holes slightly peened to give a spray.

The system is supplied by an eight stage, motor driven centrifugal pump with 2½-inch discharge. The pump has a rated capacity of 210 gallons per minute discharge against a 250-foot head, but is not being operated at maximum capacity.

British Trade News

(From our London Correspondent.)

Some weeks ago I commented on the attitude taken up by certain Norwegians, who stated through their official organ in London that they did not like to see British capital invested in their country. Information has now reached me that a Norwegian syndicate is arranging to spend about $10,000,000 at Alexander Bay in a big pulp construction mill. Do Newfoundlanders and Canadians know it? I am sure they will not object to the investment.

The Smiling Picture.

The very fine picture of the Prince of Wales, which was taken by a very old friend of mine, Lieut. Brooks, while the Prince was on his tour in Canada, has been adopted by a good many paper firms in the United Kingdom as a suitable portrait for their new year calendars. The picture shows the Prince smiling, with a cigarette in his mouth, as he looks up to acknowledge a joke passed by a Canadian soldier on him. When Lieut. Brooks returned to this country with it, and the Newspaper Proprietors' Association took charge of it, the sales for charity have been very considerable. Naturally some of the paper manufacturers and merchants, as well as many pulp men, have been very keen on securing it—particularly as the picture emanated from Canada.

The sons of members of the London Corporation, who served in the recent war, have had the high honor of the Freedom of the City of London conferred upon them.. There are several prominent paper men among those war heroes, and the ceremony of conferring the Freedom was full of interest and was well attended.

New Machine Delivered.

Messrs. Wm. Nash, Cray Valley Mill, St. Paul's Cray, Kent, have just had delivered to them from Messrs. James Milne & Co., Edinburgh, a new paper machine. I hear it is a fine piece of engineering work. Messrs. Milne have machines in hand for four other British firms and one for abroad.

Technical Education.

The Aberdeen Chamber of Commerce has received a letter from the Technical Section of the Papermakers' Association (Aberdeen area), expressing appreciation of the Chamber's efforts to encourage technical education by arranging a course of lectures on the important subject of engine and boiler management, and the economic use of fuel.

Paper Imports and Exports.

The imports of paper for November show a steady increase. Printing and writing paper was imported to the extent of 2,254,004 cwts.; printings and writings, not on reels, 283,188 cwts.; paper hangings, 3,237 cwts.; coated papers, 29,833 cwts.; packing and wrapping paper, 1,745,608 cwts.; strawboard, 2,282,560 cwts.; millboard and wood pulp board, 953,231 cwts.; other papers, 62,431 cwts. Canada enjoys a good share of the millboard and woodpulp board trade.

The exports are also keeping at a good steady figure. Writing paper was shipped abroad to the extent of 137,611 cwts.; printing paper, 365,564 cwts.; packing and wrappings, 226,155 cwts.; paper hangings, 58,729 cwts.; paste, mill and carboards, 38,112 cwts.

The export trade is receiving considerable attention at the hands of the British millowners just at present. No doubt the dullness in the home market has caused this liveliness in export circles.

The Pulp Market.

The depressed state of the paper market in the United Kingdom is still reflected in the woodpulp market. Prices show no change, and very little business is being transacted. Good supplies of groundwood are arriving from Canadian sources at British ports.

Canadian Boards.

The following supplies of cardboard, pasteboard, and strawboards have reached England during November—Strawboard, 303 cwts. at £550; cardboard and pasteboard, 500 cwts. at £700; millboards, 13,059 cwts. at £26,442. The activity in the German paper industry is causing some uneasiness in paper and board circles in London. German paper on the market today is selling much below the price quoted for British and consequently some alarm has been caused.

Mr Howard Smith in London.

Mr. Howard Smith, head of Howard Smith Paper Mills, is on a visit to London, along with Mrs. Howard Smith, Mr. Smith has been telling the trade something about what his mills can produce, and it makes interesting reading.

THE ESTIMATE OF DRYNESS IN WOOD PULP.

An interesting reply to French claims against Finnish manufacturers of wood pulp is published in the Paper and Timber Goods Journal of Helsingfors. It is worthy of note that these claims, which were made on the ground that the bales were well below the guaranteed proportion of air-dried pulp, amount to more than 300,000 marks in the case of the Varkaus mill alone. The facts appear to be as follows: In the course of the year the Varkaus mill made large deliveries of wet wood pulp to France. Certain deliveries were followed by claims based upon analytical tests made in the Research Laboratory of the Chambre de Commerce at Paris.

Sindall and Bacon analysed a lot of 295 bales, giving an absolute dry pulp of 49,37 per cent., and total moisture of 50,63 per cent. As the deliveries to France are made on a guarantee of 44,44 per cent of air-dried pulp, or 40 per cent of absolute dry, the product corresponds to the specifications.—Finsk Pappers—och Travarutidskrift November 30, 1920.

CHARGE CROWN LAND CUTTING.

Fredericton, N.B., Jan. 7—Charges that American lumber companies operating in York County along the New Brunswick-Maine international boundary were illegally cutting pulpwood on Crown lands and exporting it to the United States were made today at a meeting of the York County Council.

Councilor Wetmore of North Lake declared that the wood was hauled through private woods to the border so as to make it appear that it was cut on privately owned lands and therefore eligible for export. He demanded that the Provincial Government take steps to stop this practice.

Councilor Wetmore said that as the United States was placing a heavy discount upon the Canadian dollar, the time had come for "Canadian citizens to strike back in every possible way."

Warden Everett declared during the discussion that "our resources are being taken out of the country while we sit back and watch it going on."—N. Y. Herald.

The Event of the Year

PROGRAM OF ANNUAL MEETING

Technical Section of Canadian Pulp and Paper Association, Wednesday and Thursday, January 19th and 20th, 1921, Ritz-Carlton, Montreal.

WEDNESDAY, JANUARY 19th, 1921

9.30 a.m.—Business Meeting. Ball Room. Address of Chairman, Minutes of Previous Meeting, Secretary-Treasurer's Report.

Reports of Committees.—Committee on Program, Mr. O. Rolland; Committee on Education, Mr. T. L. Crossley; Committee on Testing Moisture, Mr. E. B. Slack; Committee on Abstracts and Publications, Mr. J. N. Stephenson; Committee on Mechanical Standards Mr. John Stadler; Committee on Chemical Standards, Mr. A. G. Durgin; Committee on Statistics, Mr. S. L. Burns; New Business; Election of Officers.

Paper by F. J. Hoxie.—"Insurance of Pulpwood". Mr. Hoxie is well known to all paper men and his subject is a timely one. He will give plenty of illustrations of methods of spraying wood piles.

Paper by J. L. Gartland—"Microscopy and its relation to the manufacture of Pulp and Paper." Mr. Gartland has studied this subject for years, and in his paper will not only cover the mechanism of the microscope, but will also discuss the possibilities of its use in mill work.

Mr. H. N. Lee, whose work in the field of microscopy is well known, will also take part in the discussion.

1 o'clock.—Luncheon in Grill Room.

Paper by W. B. Campbell.—"Beating."

Paper by K. G. Wilen.—"Strength Testing of Pulp."

8.30 p.m.—Informal Smoker, Grill Room.

THURSDAY, JANUARY 20th 1921.

10 o'clock.—Paper by F. G. Warburton.—"Speed Interlock as applied to Paper Machinery Drives." Mr. Warburton is an authority on electric drives, and his paper will prove of special interest to all paper mill men.

1 o'clock.—Luncheon, Grill Room.

Paper by Howard S. Taylor.—"The Ventilation of Paper Machine Rooms". Mr. Taylor is an old favourite of the Technical section, and his papers have always proved of special interest. The present will be no exception.

Paper by C. W. Burroughs.—"Experiences in Using various types of Power Plant Appliances". Mr. Burroughs has had exceptional opportunities for studying the many accessories available for power plants.

Program of Eighth Annual Meeting of Canadian Pulp and Paper Association, Ritz-Carlton Hotel, Montreal, January 21st, 1921.

FRIDAY, 21st JANUARY, 1921.

10.00 a.m.—Business Meeting. Vice-Regal Suite, Second Floor. Minutes of Last Meeting. Presidential Address: Mr. Geo. Chahoon, Jnr.

Reports of sections.—News Section, Mr. Geo. M. McKee; Chemical Pulp Section, Mr. T. J. Stevenson; Mechanical Pulp Section, Mr. J. A. Bothwell; Book and Writing Section, Mr. H. F. E. Kent; Board Section, Mr. J. F. Taylor; Coated Section, Mr. Geo. Pauline; Felt Section, Mr. W. R. McNeil; Wrapping Section, Mr. F. J. Campbell; Tissue Section, Mr. Geo. Carruthers; Technical Section, Mr. L. H. Shipman; Woodlands Section, Gen. J. B. White.

Other Reports.—The Committee on Research.—Col. C. H. L. Jones, The Secretary's. New Business. Election of Officers.

1.30 o'clock.—Luncheon, in the Ball Room. Speaker: Gen. Sir Arthur Currie, K.C.M.G.

7.15 p.m.—Reception by the Officers.

7.30 p.m.—Dinner in the Ball Room. The price of the Dinner is $10. No seating reservations accepted after Thursday, 13th Jannuary, 1921.

Sectional Meetings.

WEDNESDAY, 19th JANUARY:—10 o'clock:—

Technical Section Meeting; Ritz Carlton Hotel; Woodlands Section Meeting, Windsor Hotel, Ladies Ordinary; Bag Section Meeting, Association Rooms. —2 o'clock:—Quebec Forest Protective Association; St. Maurice Forest Protective Association, Windsor Hotel, Ladies Ordinary; Wrapping Section Meeting, Association Rooms.—3.30 o'clock:—Tissue Section Meeting, Association Rooms.

THURSDAY, 20th JANUARY, 1921:—10 o'clock:—

Technical Section Meeting, Ritz Carlton Hotel; Canadian Forestry Association, Windsor Hotel, Ladies Ordinary. Felt Section Meeting, Association Rooms; Cost-Keeping Committee of Newsprint Service Bureau, Blue Room, Windsor Hotel; Chemical Pulp Section, Vice-Regal Suite, Ritz.—2.30 o'clock:—Book and Writing Section, Association Rooms; Mechanical Pulp Section, Vice-Regal Suite.—4 o'clock:—Board Section, Vice Regal Suite.

FRIDAY, JANUARY 21st, 1921:—10 o'clock:—

Eighth Annual Meeting C. P. & P. A., Vice-Regal Suite.—12 o'clock:—Coated Paper Section.—1 o'clock:—Luncheon, Ball Room.—3 o'clock:—Newsprint Service Bureau Meeting, Vice-Regal Suite. (The Newsprint Section of C. P. & P. A. will meet during the afternoon.)—7.30 o'clock:—Eighth Annual Dinner.

BETTER EXPRESS SERVICE AIM OF RIGHT WAY PLAN.

Shippers in every industry using express service, will be asked to co-operate in the "Right Way Plan," a new educational movement about to be inaugurated in the express business, by the American Railway Express Company.

Special emphasis is to be laid on what is called "Starting express shipments right," in which shippers will be asked to give special attention to complete and accurate addressing of shipments and to the packing rules laid down in the Express Classification, authorized by the Interstate Commerce Commission.

The carrier announces that having received shipments turned over to it in proper condition for shipping, it proposes to see that while in its hands all business will be carefully guarded, and expeditiously handled to destination. Numerous placards and pamphlets detailing the correct shipping methods will be distributed to express users.

This is considered an opportune time in the express business to call the attention of express employes to proper methods established by the carrier, for the handling of the business. Under the Right Way Plan selected employes, expert in their individual lines, will take a prominent part in a series of meetings to be held throughout the year, the first of which is called for January 11, 1921.

Technical Section

REVIEW OF RECENT LITERATURE.

PATENTS.

A-3. K-3. Process for obtaining paper pulp. Fr. patent No. 495,867, J. C. DURERE, F. F. ROBERT, C. FABRE, France, June 27, 1919. Chimie & Industrie, **4**, 516, (Oct. 1920). Two grades of pulp are prepared by two successive treatments of furze (a plant which grows abundantly on barren soils): 1) By the action of dil. NaOH (2-3%) under press. (2-3 kg.) for 5 hrs.' a first grade of pulp obtained; it is long-fibered and can be used as a rag substitute in the manuf. of paper pulps: 2) The residue from the 1st treatment is crushed and may or may not be cooked with NaOH under press.; this yields a 2nd grade pulp which can be used for the manuf. of cellulose acetates or plastics.—A.P.-C.

A-15. Alkyl ethers of starch. CLARENCE J. WEST. Paper, **27**, No. 5, 16, 36, (Oct. 6, 1920). A description of the prepn. and properties of alkyl ethers of starch, covered by U. S. patent No. 1,350,820, issued to Leon Lilienfeld, Vienna, Aug. 24, 1920. The Raw materials to be used consist of all carbohydrates of the type $(C_6H_{10}O_5)n$ (with the exception of cellulose), derivatives of these carbohydrates and materials containing such carbohydrates, either dissolved in suitable solvents or undissolved. The process consists in treating the carbohydrates or their derivatives with alkyl salts of inorg. acids, or other suitable alkyl esters, in the presence of basic substances, and thereafter isolating the alkyl ethers of the carbohydrates from the reaction mixt. Probably in many cases mixts. of various alkyl ethers of starch are produced. Mixed alkyl ethers of starch are produced by allowing 2 or more inorg. acid esters or other suitable esters (differing from one another as regards the alkyl radical) to act upon starch or its derivatives; or by producing alkyl ethers of starch containing free OH groups with one or more similar alkyl radicals, and then treating them with alkylating agents containing other alkyl radicals. The resulting ether possess an extremely great variety of properties according to the no. and nature of the alkyl radicals linked, ether-fashion, with the carbohydrate molecule, and also according to the particular carbohydrate employed. They all have in common an extremely high degree of stability, neutrality and indiff., and are relatively non-flammable. Some of its many possible uses are enumerated.—A.P.-C.

A-16. Acid-resistant alloy. U.S. patent No. 1,351,811 ARRIGO TEDESCO, assignor to Societa Anonima Stabilimenti Biak, Turin, Italy, Sept. 7, 1920. Chem. Met. Eng., **23**, 847, (Oct. 27, 1920). The alloy consists of Cu 35-44%, Fe 1.5-4.75%, W 3-6%, Ni 60. 5-45 .25% and is known as "biakmetal". Alloys of such compn. in cast condition have a tensile strength of about 55 kg. per sq. mm. and an elongation of about 20%. They may be forged and rolled both hot and cold. After drawing, the tensile strength in some cases exceeds 100 kg. per sq. mm. The alloy is said to resist the action of acids as follows: H_2SO_4, any strength at. temps. under 100°C; HCl, AcOH, citric and tannic acids any strength at any temp.; cold HNO_3, up to 1.40 sp. gr.—A.P.-C.

A-16; E-U. Acid-proof cement. U. S. patent. No. 1,287,995, A. E. HOLLEY and H. W. WEBB, assignors to Chance & Hunt, England. Chimie & Industrie, **4**, 506, (Oct. 1920). A cement consisting of about 17 parts by wt. of siliceous acid-resisting material, 0.12 part $CaSO_4$, 3 parts of 34°Be water glass.

E-2; L-7. Sulfite waste liquor as a precipitant for artificial threads, ribbons, films and sheets. Br. pat. No. 145,627, M. MUELLER, Finkenwalde, near Stettin, Sept. 1, 1920. Chem. Met. Eng., **23**, 1036, (Nov. 24, 1920). In the manufacture of artificial threads and of ribbons, films, or sheets from viscose, the soln, is introduced through suitably shaped apertures into a pptg. bath consisting of sulfite waste liquor to which has been added a mineral acid or an acid salt, e.g., H_2SO_4, H_2SO_3, or HCl. The waste liquor obtained in the manuf. of "sulfite ethers" may also be used. It is preferred to use a waste liquor which is free from CaO, e.g., a Na_2SO_3 liquor obtained when the wood is boiled with $NaHSO_3$ or "by conversion of Na salts from the waste lye of lime"; and the liquor should be concd. before use. Hardening agents such as formaldehyde or $Al_2(SO_4)_3$, and glue, seaweed mucilages, etc., may be added to the pptg. bath; by such additions the sensitiveness of the threads, etc., to water and their capacity for dyeing can be favorably affected.—A.P.-C.

E-2. Method of and means for the de-acidification of raw wood-pulp liquor. Br. patent No. 150,571, B. GRATZ, Nov. 26, 1919. J. Soc. Chem. Ind., 39, 686A, (Oct. 30, 1920). The liquor is allowed to flow along a trough through which the ashes of lignite or other brown coals are transported in an opposite direction by means of a mechanical conveyor. The cost of neutralization is small, and the liquor obtained may be used for prepg. artificial stone.—A.P.-C.

E-2. Manufacture of a material resembling dextrin from cellulose waste liquor. Ger. patent No. 322,688, M. CLAASS, Feb. 15, 1918. J. Soc. Chem. Ind., **39**, 719A, (Nov. 15, 1920). Cellulose waste liquor is improved both in adhesive properties and in color by treatment below 100°C with acids, sulfates, and a sulfoxylate.—A.P.-C.

E-5; F-5 Digester. Br. patent No. 124,676, E. SCHAUFFELBERGER, England. Chimie & Industrie, **4**, 516, (Oct. 1920). A digester for the prepn. of pulp from bamboo, esparto, groundwood, in which the liquor is made to circulate from bottom to top and in which the liquor is sprayed at the top of the digester. The liquor may also be heated in an exterior heater.—A.P.-C.

F-2. Process for the treatment of black liquor. U.S. patent No. 1,298,479, V. DREWSEN, Assignor to West Virginia Pulp & Paper Co., U.S.A. Chimie & Industrie, **4**, 517, (Oct. 1920). The black liquor is concentrated by adding powdered CaO so as to obtain a dry caustic mixt. This is distd. to obtain acetates and other volatile products.—A.P.-C.

F-2. Process for obtaining acetates from black liquor. U. S. patent No. 1,298,478, V. DREWSEN, assignor to the West Virginia Pulp & Paper Co., U.S.A. Chimie

& Industrie, **4**, 517, (Oct. 1920). The liquor is concd. to a sp. gr. of about 1.30, and 10% NaOH and 50% powdered CaO are added to obtain a strongly caustic and porous mixt. After heating to about 250°C, it is cooled out of contact with air and extracted with cold water so as to obtain an acetate soln. of about 30°Be. CO_2 is passed through the soln., the ppt. of $NaHCO_3$ is sepd., AcOH is added to purify the liquor and neutralize the carbonates, and an excess of 5% (of the solids) of powdered CaO is added. The liquor is filtered, concentrated, and the NaAc crystallized out. The mother liquor is acidified with H_2SO_4 and the AcOH distilled off.—A.P.-C.

F-2. Process for obtaining acetates from black liquor. U. S. patent No. 1,293,481, V. DREWSEN, assignor to West Virginia Pulp & Paper Co., U.S.A. Chimie & Industrie, **4**, 517, (Oct. 1920). The liquor is concd. until it contains about 50% solids, and the lignin compds. and $NaHCO_3$ are pptd. by passing CO_2 through the soln., this being done under press. to agglomerate the ppt. The ppt. is filtered off and the liquor is concd. by adding about half its wt. of powdered CaO, thus giving a drying caustic mixt. This is pulverized, moistened, treated with CO_2, heated to 160-200°C, and treated with a small quantity of cold water to extract only the NaAc which is then crystallized out.—A.P.-C.

F-2. Stationary digesters and the like used in paper-making. Br. patent No. 150,782, S. MILNE, June 4, 1919. J. Soc. Chem. Ind., **39**, 719A, (Nov.Nov. 15, 1920). A vertical cylindrical digester has a conical lower portion within which are perforated plates for supporting the grass or like material under treatment. A valve at the lowest part of the digester has a hollow spindle connected at the upper end with a perforated pipe passing into the lower part of the digester. During digestion the liquor drains through the perforated plates and the outer walls, and is returned to the top of the app. by a steam injector or pump; when the process is complete the valve at the bottom is opened and the contents are washed out by water, spent liquor, steam, or air, and forced under press. into the digester through the valve spindle and perforated pipe. —A.P.-C.

F-2. Process for treating black liquor. Ger. patent No. 322,771, H. ACHENBACH, Feb. 16, 1919. J. Soc. Chem. Ind., **39** 686A, (Oct. 30, 1920). The waste liquor passes down a tower, in which it is concd. from about 5°Be (sp. gr. 1.037) to about 10°B (sp. gr. 1.075) by means of furnace gases. It can then be evapd. in the usual app. without frothing.—A.P.-C.

F-5; K-3. Process for the separation of vegetable fibers. Fr. patent No. 506,292, ALBERT NODON, May 25, 1920. Papier, **23**, 228-9, (Oct. 1920). The raw material is impregnated with a conducting soln. containing either a salt or H_2SO_4, the latter helping to remove the mineral matter combined with the incrustants and ensuring a proper conductivity of the whole mass. The impregnated material is placed between vertical Pb electrodes and subjected to the action of an electric current. Through the combined action of the current, of the ozone formed through electrolysis and of the acid soln. the incrusting matters are rapidly oxidized and resinified, thus being rendered soluble in alkalies. The fibers are completely freed by boiling the mass for a few hrs.. in a weakly alkaline soln., without press. The alkaline soaps thus formed can easily be washed out with cold water. The isolated fibers are slightly colored and are very strong as they have not been appreciably weakened by the alkaline treatment.

H-4. Electrolytic chlorine cell. U. S. patent No. 1,349,597, HERBERT I. ALLEN and KENT R. FOX, Portland, Me., Assignors to Electron Chemical Co., Aug. 17, 1920. Chem. Met. Eng., **23**, 847, (Oct. 27, 1920). An improved form of electrolytic cell for the decompn. of brine consists of a suitable tank, a rectangular, box-shaped cathode having perforated active end, side and bottom walls, and a rectangular tabular anode. Certain advantages result from this construction. For example, practically the entire inner surface of the cathode, including the bottom, sides and end walls, is electrically active and the exterior faces of the cathode are wholly unsubmerged in any body of electrolyte. By providing a water-tight and gas-tight pressure joint between the cathode and the free-board section, it is possible to build up the column of electrolyte in the free-board section so as to secure the desired hydrostatic head as the diaphragm becomes more or less clogged with the impurities in the brine, thus insuring a longer diaphragm life than would otherwise be possible.—A.P.-C.

K-10; K-23. Sizing, waterproofing, dressing, etc., paper, fabrics, etc. Ger. patent No. 321,232, W. SCHMIDT and E. HEUSER, March 15, 1918; addition to 296,124. J. Soc. Chem. Ind., **39**, 653A, (Oct. 15, 1920). The paper pulp or fabric is treated with a solution of tar soap prepd. by saponification of wood-, lignite-, or coal-tar, previously extd. with water. Injurious acid substances may be removed from the tar by distn., and a soap prepd. by incomplete saponification of the tar may be used.—A.P.-C.

K-10; K-23. Sizing and waterprofing of paper, pulps, paper yarns and fabrics. Ger. patent No. 318,923, E. FUES and E. BRAUNMULLER, Jan. 3, 1917. J. Soc. Chem. Ind., **39**, 653A, (Oct. 15, 1920). The paper material is treated with colloids such as dialyzed solns. of hydroxides of trivalent metals, preferably Fe or Cr, with or without the addition of solutions of other, preferably org., colloids.—A.P.-C.

K3. Process for the manufacture of paper pulp from rags, cordage, twine and the like. Fr. patent No. 506,569, ARMAND BOILEAU, (Dordogne), France, June 1, 1920. Papier, **23**, 229-31, (Oct. 1920). The material in a proper state of subdivision is first of all subjected to the action of a very slightly alkaline and rather weak NaOCl soln. This may be carried out cold for a few hrs., and followed by washing with cold water for ½ hr. The material can then be cooked under press. with a relatively weak (as low as 1-2%) soln. of Na_2CO_3, NaOH, $NaHSO_3$, etc., for a relatively short time (2-4 hrs.). Or it may be treated with cold NH_4OH or ammoniacal $NaHSO_3$. It is then washed again and submitted to mechanical treatment. The essential characteristic of the process lies in the prelim. NaOCl treatment, which facilitates and hastens the saponification of the fatty material with which the fibers are more or less covered, thereby reducing the consumption of alkali, and also the press. and time required for the operation.—A.P.-C.

K-3. Utilization of the waste liquors from the alkaline digestion of straw. Ger. patent No. 319,068, S. HERZBERG, Nov. 13, 1917. J. Soc. Chem. Ind., **39**, 654A, (Oct. 15, 1920). Alkaline liquors from the treatment of straw are electrolyzed to obtain the NaOH in a concn. suitable for further use. The degree of evolution of O or of oxidation of org. substances at the anode varies with the strength of the current.—A.P.-C.

(Continued on page 46)

UNITED STATES NOTES

J. R. Carter, treasurer of Carter, Rice & Co., Boston, Mass., was honored last week at a celebration tendered by the trade, his business associates and employes in recognition of his 50th anniversary as a paper merchant. Following a reception arranged by employes of Carter, Rice & Co., Mr. Carter was tendered a complimentary dinner at the Algonquin Club by more than 100 men representative of Boston's paper trade. Mr. Carter began business in the paper field January 2, 1871 in Boston. He has been associated continuously since then with the same concern, known originally as Carter & Rice.

The Beaver Board Companies of Buffalo, N.Y. have received the consent of stockholders to an issue of notes. The proceeds of this issue are to be used as working capital to take care of the increase of business expected by the management during 1921.

O. M. Porter, secretary of the Woodlands Section of the American Pulp and Paper Association, reports that the membership of the organization has reached a total of sixty and that the numerous inquiries he is receiving presage a further accretion of members and the early fruition of some of the things planned. These plans include the mapping out of a system of cost accounting in woods operations; the establishment of a woodlands experiment station for trying out new methods and machines in woods operations, and the taking at regular intervals of statistics covering the pulpwood situation generally.

The Flower City Tissue Mills, Rochester, N. Y., through a recently effected reorganization, comes under the control of the owners of the Scottsville Paper Box Board Corporation. A certificate of incorporation was filed at Albany a week ago by the latter concern in which it was capitalized at $1,000,000. The corporation begins operations with $400,000 paid in. The office will be in Rochester and the box board plant in Scottsville. Part of the plants and products of the Flower City mills in Rochester will be taken over by the box board company. The plant of the latter at Scottsville will be enlarged for the manufacture of paper, folder stock and tag board. The Rochester plant will continue to be operated under the old name Flower City Tissue Mills and will continue its production of high grade tissue paper.

Paper firms in various parts of the country followed out their usual practice this year of giving bonuses to their employes. The bonus checks were forthcoming even from several concerns whose plant had been shut down due to the depression. At Menasha, Wis., W. M. Gilbert, head of the Gilbert Paper Company, presented checks to employes, the amounts of which were governed by the tenure of service. Bonus checks aggregating more than $7,000 were distributed to the employes of the Victor Bag and Paper Company at Marinette, Wis. The plant of this concern has been shut down since early in December. The letter accompanying the checks expressed the regrets of the company officials that no definite announcement as to when operations would be resumed could be made. Insurance policies for amounts ranging from $500 to $2,000 were made out on the group insurance plan, effective January 1, for all employees of the Sherman Paper Company Watertown, N.Y., who have been in service six months or more.

John H. A. Acer, of Montreal, is named as president in a certificate of incorporation filed at Springfield, Ill., January 1, by Acer & Co., Inc., 366 Madison Ave., New York, dealers in wood pulp. The company is to transact business in Illinois, with a capital stock of $100,000, Headquarters in Illinois will be at 30 North La Salle street, Chicago. J. R. S. McLennon, Montreal, is secretary of the concern.

The total production of dyes in the United States in 1919 was more than 63,000,000 million pounds, according to an estimate contained in a report on the development of the American dye industry made public last week by the United States Tariff Commission. This total output of the domestic product exceeds pre-war dye imports by 38 per cent. The industry, states the report, has made marked progress and the dyes produced are of improved quality, giving the consumer better value for his money. Many instances are said by the commission to have been found of a decrease in those dyes relatively easy to make and the appearance of many new dyes. The output of certain dyes is said to have been developed to a point beyond the domestic consumption and large quantities of these were exported, particularly to China and Japan.

William H. McCarthy, of Lowville, N.Y., has been awarded the contract for cutting pulpwood on the $1,750,000 tract of timber in Northern New York, recently purchased by Harry P. Gould for the Gould Paper Company. Camps will be established during the coming summer and the first season should yield a cut of over 10,000 cords. Mr. McCarthy's contract with the Gould Paper Company ends his connection with the Dexter Sulphite and Paper Company which he has served for more than 25 years as a woodsman. The lumbering over the big tract of the Gould Company will be carried on through a period of 12 to 15 years. A state forester will be on the job and the cutting will be done under scientific methods, no trees under 11 inches in diameter being taken.

Paper making improvements that may work out as an important factor in the development of the industry in Maine are declared to have been devised in the laboratory of the Eastern Manufacturing Company. H. E. Fitch of this company has issued the following statement regarding the new discoveries: "Dr. Albert L. Fitch, of the University of Maine and the physics laboratory are helping us to develop an appliance for the measurement and control of the preparation of stock for paper in beaters and refining engines. An apparatus of this kind, if successful, would have a far reaching effect on the pulp and paper industry, as it wuld change the present "rule of thumb" method into scientific procedure."

PULP AND PAPER NEWS

The many friends of Mr. Robert J. Flynn, manager of Messrs. Buntin-Reid Company, Paper jobbers, Toronto, congratulated him on New Years day after having won a strenuous municipal fight at Weston where he was elected to the Mayor's chair. Mr. Flynn has been active in municipal affairs in that town for some time, especially in school board circles.

The death took place in Toronto of Charles Roddy, aged 74, printer and publisher. Deceased, about 37 years ago entered business for himself and established the firm of Charles Roddy & Company, printers and publishers. About two years ago he retired from active business life.

Mr. J. E. Dubuc, who has been on a sea voyage for his health, etc., has returned to Canada in a very optimistic mood. He went from Montreal to Chandler, Quebec, where his company has a sulphite mill.

Ernest Rossittet, assistant general manager of the Brompton Pulp and Paper Co. has gone to California for a much needed rest.

George M. Rose, president of the Hunter-Rose Company, Limited, publishers, was a successful candidate for the Toronto aldermanic race, having been elected for Ward Three.

The head office of the Provincial Paper Mills, Limited, at Toronto, substantially confirms the somewhat exaggerated press despatches concerning big expansion plans under way in the Port Arthur district. An official statement will soon be published in the Pulp and Paper Magazine.

C. B. Thomas, vice-president and technical director of the Riordon Co. is enjoying a holiday in his native land — the Land of the Midnight Sun—C. Howard Smith is in England on business.

The Kaministiqua Pulp & Paper Company is issuing bonds to finance an increase in the capacity of its plant from 25 to 100 tons per day. These three industries with the Fort William Paper Co. and the projected Great Lakes Pulp and Paper Co will make the Head of the Lakes one of the biggest pulp and paper centres in the Dominion.

Almost simultaneously John Stirrett & Sons, who procured the big plant of the Port Arthur Waggon Company, announces that Chicago capitalists have financed a pulp mill of 100 tons per day capacity, and that establishment of this industry will be commenced without delay.

The first of the Pulp and Paper Accessories, Ltd. chip screens to be manufactured in Canada has just been shipped to Price Bros. Ltd.. for installation in their mill at Jonquière, Que. These screens have hitherto only been manufactured in Norway, but are now being turned out by the Dominion Engineering Works, Montreal.

Among the Canadians in New York last week were George Chahoon, jr., president of the Laurentide Company and Geo. F. Steele, general manager of the Canadian Export Paper Co. Mr. Chahoon was seen in Montreal Friday.

Among the outside paper men in Toronto during the week were F. J. Campbell general manager of the Canada Paper Company, Limited, Windsor Mills; John Martin of the John Martin Paper Company, Limited, Winnipeg, and A. L. Dawe, Secretary of the Canadian Pulp and Paper Association.

The Pulp and Paper Mill Accessories, Ltd., Montreal, have sold the patent rights in the United States for the P. A. P. A. Screen to the Valley Iron Works, Appleton, Wisconsin.

H. Biermans, general manager of the Belgo Canadian Pulp and Paper Co. is on his way from New York to France and Belgium. He expects to be back in March.

Guy Tombs, transportation expert of the Canadian Export Paper Co. has been laid up with a carbuncle. (We almost said barnacle). It was no joke.

PUBLISHERS MET WITH PAPER MAKERS.

An important conference of the publishers of trade and class journals and the manufacturers of book papers was held in Toronto last week at the King Edward hotel and the situation regarding supply and prices for the coming year was talked over in a friendly spirit. The publishers set forth their case along the lines that a number of them were paying practically double for their paper to what they were a year ago and, as a consequence of the high cost of production, several journals had been forced out of business. They also stated that they were not able to advance their advertising rates any more as advertisers were not now in a mood where they would pay increased charges and some were contending that the cost of advertising should come down in accordance with the trend of all other commodities and supplies. The publishers argued that Canadian mills should reduce their prices and make new contracts in more favorable terms than the ones now expiring.

It is understood that the manufacturers stated that they would take care of the demand of the publishers for the coming year and set forth the fact that producing costs were still high while raw materials had come down some. It was only now that the mills were beginning to feel the benefit of the reduction in such commodities as soft coal, groundwood and sulphite pulp, rags, etc., after using up their high priced supplies which they had on hand. It is learned that the manufacturers will issue a new price list in a few days and that it will show a reduction from the present schedule.

NEW LAURENTIDE MACHINE MAKING PAPER.

F. A. Sabbaton and Johan Stadler of the Laurentide Co of the Belgo Canadian Paper Co. were in Montreal last Friday on business connected with the Technical Section. Mr. Sabbaton referred to Laurentide's new machine and said it was turning out paper for the New York Times. It was started at 650 feet and had run 6½ hours without a break.

REVIEW OF RECENT LITERATURE.

(Continued from page 43.)

K-18; L-4. The fiber container industry. J. D. MALCOLMSON, Industrial Fellow of the Mellon Institute of Industrial Research of the University of Pittsburg. Paper, **27**, No. 8, 14-5, 17, (Oct. 27, 1920). "A fiber shipping container is a tough, efficient and economical outer package built to withstand the wear and tear of freight, express and parcel post shipment." A brief description of the origin and growth of the industry, of the great saving of lumber it effects, of the raw materials used, and of the methods of manufacture of laminated solid fiber board and of double-faced corrugated board.—A. P.-C.

K-23. Paper allowing of the removal of ink stains. J. SCOTT. Paper Maker, **59**, No. 1, 321-2, (Jan. 1, 1920); Chimie et Industrie, **4**, 515, (Oct. 1920). Heavy white blotting paper is immersed in an oxalic acid solution (1 of acid to 4 of water), drained, and dried in a current of air. The author shown the behavior of this paper and also shows by means of a microphotograph, the appearance of the paper after an ink stain has been removed.—A. P.-C.

K-22. Corrosion-resisting paper. J. SCOTT. Paper Maker, **59**, No. 2, 166-7, (Feb. 2, 1920); Chimie et Industrie, **4**, 515, (Oct. 1920). A paper which can protect metals from oxidation is obtained by impregnating with a mixture consisting of 10-5 per cent of volatile hydrocarbons dissolved in 90-85 per cent of heavy mineral oil (lubricating oils, for example). There is no chemical reaction between the metal and the paper, and the thin oily layer adhering to the metal can easily be removed.—A. P.-C.

R-3. Cost accounting from an executive's standpoint. HENRY D. SCHMIDT, Vice-President, Schmidt & Ault Paper Co., York, Pa. Paper, **27**, No. 8, 16-7, (Oct. 27, 1920). A description of how the Cost Department can and should control the operations of other departments in any industrial enterprise.—A. P.-C.

R-7. Some economic aspects of welfare work. H. P. CARRUTH, General Manager, Mead Paper & Pulp Co., Chillicothe, Me. Paper, **27**, No. 8, 12-3, (Oct. 27, 1920). A discussion of "Welfare Work", not. "as a sort of general specific for all the industrial ills, but as a part of a general industrial policy which is in line with the trend of the times and in sympathy with the modern idea that workmen are regular human beings, thinking, and reacting like the normal man in any walk of life."

PATENTS.

K-3. Utilization of the waste liquors from the alkaline digestion of straw. Ger. patent No. 321,453, S. HERZBERG, March 28, 1919; addition to 319,068 (preceding abstract). J. Soc. Chem. Ind., **39**, 654A, (Oct. 15, 1920). The liquor, or at last the portion to be used as anodic bath, is treated in the cold with mineral acid or bisulfate and heated to 70°C; it is then filtered from pptd. org. substances and electrolyzed. The pptd.. lignin acid can be utilized, and if NaCl soln. is used as anodic electrolyte the Cl produced may be employed in the dissolution of chopped straw previously treated with milk of lime.—A.P.-C.

K-6. Reclaiming writing paper. Ger. patent No. 321,545, July 26, 1919. HEINRICH GOTHE, Dusseldorf. Paper **26**, No. 6, 30, (Oct. 13, 1920) and J. Soc. Chem. Ind., **39**, 653A (Oct. 15, 1920). The paper fastened on strings or bands, is passed through 4 baths. The first bath contains 2.5 kg. of oxalic acid to 25 kg. of water, to which 2.5 kg. of glycerine are added. This bath dissolves the ink. The next bath is composed of 25 kg. of water and 0.25 kg. of $NaMnO_4$, to be gradually dissolved. The 2nd bath removes all traces of ink. The 3rd bath holds 2.5 kg. of $PbAc_2$ in 25 kg. of water. The 4th bath contains $Al_2(SO_4)_3$. The last 2 baths are for the purpose of restoring the paper to its former quality. After being dried and repressed it may be used over again. It is claimed it is then as good as new.—A.P.-C.

K-6. Method of reclaiming paper stock. U. S. patent No. 1,351,092. C. BASKERVILLE and C. M. JOYCE, Aug. 31, 1920. J. Soc. Chem. Ind., **39**, **686A**, (Oct. 30, 1920). Waste inked paper is satd. with a mixt. of kerosene, borax, soap and water.—A.P.-C.

PAPER COMPANY URGES PRACTICE OF FORESTRY.

The advertisement which is copied below is a full page advertisement on the inside cover of "American Forestry" of November, 1920. It indicates the interest of manufacturers of paper in the United States in the application of forestry to forest lands. The American Paper and Pulp Association is very appreciative of this advertisement, though it has not learned to whom it should extend its thanks. The advertisement is as follows:

PRACTICE OF FORESTRY WILL PROVIDE FOR THE FUTURE OF THE PULP AND PAPER INDUSTRY.

The problem of the timber supply affects every pulp and paper manufacturer in America, whether he owns timberland, purchases pulp or makes it.

It is a vital problem to the whole paper making industry and of special and immediate importance to the manufacturers of New England and the other eastern states.

Pulp and paper making is the one great industry using wood as a raw material in which there is much hope for the practice of forestry as a commercial undertaking upon privately owned land.

Pulp and paper manufacturers should concentrate on protecting their timberlands from fire and engage in timber planting and timber growing operations under the direction of qualified foresters so they may have a future supply of wood for their mills.

They Should Earnestly Support the Remedial Measures Proposed by the American Pulp and Paper Association.

(Paid for by a paper company in the best interests of the industry).

CATALOGS RECEIVED.

The Pulp & Paper Magazine acknowledges the receipt of Bulletins 1 and 2, in an attractive binder, from the Williams Apparatus Co., Watertown, N. Y.

Another interesting catalog is the sample book of Berkshire Cover Paper for which the Beveridge Paper Co., Montreal, is the agent for Eastern Canada. This is a deckle edge paper in two thicknesses and seven colors.

The Hughes-Owens Co., have arranged for an exhibit and demonstration of the Widney "Modulimeter" for paper testing at the Ritz-Carlton Hotel, next week, while the Technical Section is in session. Other articles of interest to the pulp and paper men that will be shown are chemical laboratory apparatus, glassware, microscopes and photo-micrographic apparatus.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, Jan. 8.—Paper trade conditions are in a state of evolution just now. The reign of high prices is at an end and the next few days will likely see reductions in paper lines hitherto untouched by falling prices conditions. Last week, wrapping paper, tissues, toilet and some other lines took a tumble as a result of the quiet period and lessened demand, and in sympathy with the falling prices in most other commodities. Book paper, ledgers and bonds will be the next to go under the knife and preparations are already under way by both the manufacturers and the jobbers to shave the prices in accordance with existing conditions. A new price list for fine papers will likely be issued next week and the downward revision will be worked out on present day costs and the new schedule will embrace practically all the lines of the finer grades of paper. The Pulp and Paper Magazine is informed that the new schedule will not be drastic but there will be a trimming in prices to meet present-day conditions and with a view to getting the trade back to a normal basis. There will not be any big reductions. The mills will shave their prices to the jobber and the jobber will reduce his price and take whatever losses there are philosophically. It is recognized in the trade generally that paper prices could not be expected to remain at their present level while other commodities are coming down and manufacturers and jobbers alike are accepting the situation as it exists. It is recognized that while there has been a reduction in raw stock, the overhead expenses remain at a high level, which means that there cannot be any heavy reductions in selling prices. Some lines of raw stock are higher today than they have ever been. Soda pulp may be mentioned as an instance, as high as 12c being paid by some of the manufacturers for that article alone. These conditions will all be taken into consideration in the preparation for the issuance of the new schedule of prices for fine paper next week.

FINE PAPERS.—Manufacturers of book papers, bonds and ledgers are operating with lessened orders but some of them are still running on back orders which will soon be finished up. The public has stopped buying and all the jobbing warehouses are carrying heavy stocks. It is generally expected, however, that buying will be resumed very shortly as a result of price reductions and that business will pick up again in response to the more favorable figures about to be fixed. Stock-taking is in progress generally among the wholesalers and the reductions will be welcomed for the sake of their inventories. The jobber will know the first month in the year exactly where he stands in regard to the value of his stock in the warehouse and his business generally will be on a more substantial basis.

WRAPPING PAPER AND BAGS.—Although orders coming in are small, jobbers in the wrapping paper and bag lines say that they are sufficiently large to constitute a fairly large volume of business. Stocks have been heavy and the buying small for some weeks past but there are signs that business is picking up considerably and the drop in prices is already having its effect in increased business. One jobber reports that wire orders are beginning to come in now and although the lots ordered are comparatively small, the fact that the telegraph is being used, indicates that the point had been reached when stocks of the users had very nearly reached the vanishing point. From now on it is expected that there will be fairly free buying and the wrapping paper trade is viewed optimistically. The decrease in the mill price of wrapping papers represents a cent and a half a pound and fifteen per cent. has been lopped off both paper bags and tissue papers. The manila bag discounts are now 35, 10, 10 and 5 per cent. and kraft bags now carry discounts of 50, 10 and 5 per cent. There is no change in white bags. Grey brown and news counter rolls are now quoted at $8.50; No. 3 manila, $9.50, No. 1 manila $11.50, fibre $10.50 and kraft $11.50, f.o.b. Toronto.

COATED PAPERS.—Although there are not many new orders coming in for the coating paper mills, one mill, at least, reports that it is still working on back orders representing operations of from a month to a month and a half. As yet there has been no drop in prices and manufacturers point out that this contingency will entirely depend upon the pulp and paper market. If the book paper market comes down it is quite likely that there will be a downward revision of coated paper lines. In the meantime the mills are doing a fair amount of business, although in harmony with the paper trade generally, they are going through a somewhat quiet period.

TISSUES AND TOILETS.—Light weight paper mills have no orders ahead to speak of and although there is no stocking by any of the jobbers there is a fair volume of business representing current requirements of the trade. The recent price reductions are not expected to make their effect felt for a few weeks but buying is expected to be resumed on a normal basis in another month or less. Toilets are down fifteen per cent. and tissues from ten to fifteen per cent. Jobbers' prices on tissues are as follows: twelve pound No. 2 manila, 24 x 36, $1.70; 20 x 30, $1.25; ten-pound cap, 24 x 36, $1.95; 20 x 30, $1.35; ten-pound natural sulphite 24 x 36, $2.30; 20 x 31, $1.60; No. 1 white 24 x 36, ten-pound $2.55; 20 x 30, $1.85.

NEW YORK MARKETS.

New York, January 8.—(Special Correspondence)—Probably the most important development in the paper market this week is an improvement in inquiry. Consumers in frequent cases have sounded out mills and jobbers concerning supplies, but, evidently not being in immediate need of paper, have mostly held off in placing orders, so that actual business has expanded but little, if any. Chief activity in the market at present surrounds the arranging of contracts covering deliveries over the course of the next few months. Publishers and printers and other large consumers who purchase the bulk of their supplies on contract are reported meeting the prices named by manufacturers and mill agents without apparent reluctance, and it is authoritatively stated that some mills have contracted for the major portion of their production for the entire year of 1921.

In this connection, an interesting report was issued by a financial concern in the Wall Street district severay days ago relative to the largest single manufacturer of newsprint in the United States, which says, in part: "The International Paper Company enters the new year with practically all its newsprint output contracted for twelve months in advance. The slowing up of activities taking place in other lines of business is not reflected in the newsprint industry and mills are running to capacity. Demands for print paper upon the International Paper Company for 1921 delivery were far in excess of its capacity and it was necessary to cut customers 20 per cent. below 1920 contracts. Production this year is expected to approximate the usual 500,000 tons of paper, of which 300,000 tons is news and the balance of various grades running from fine book papers to wrapping material. When the new mill of the company at Three Rivers, Quebec, is completed late this year or early in 1922, it should add approximately 72,000 tons of paper annually to the output."

Aside from contract business, trading in paper during the week has been mainly of routine character and involving in the aggregate a light tonnage. This is not unusual for the first week of a new year and has not served to shake the confidence felt by members of the trade that activity lies ahead. On the contrary, the increased inquiry from large buyers has been taken to indicate that consumers are actually in need of paper and that their looking around among mills and jobbers for supplies and quotations is but a forerunner to more concerted buying in the near future. The head of one of the largest paper distributing organizations in the States expresses the belief that by the end of January "things will be humming" in the paper trade. This authority states that there are bonafide indications that 1921 is to be a banner year for the industry, and that consumption of paper of various kinds during the current year will be of greater magnitude than ever before. It seems significant that opinion runs the same throughout the trade and that nearly everyone connected with the industry, from the jobbing house salesman on the street to officials of the largest manufacturing companies, are possessed of the same sort of confidence regarding the market outlook. And there is no denying that sentiment goes a long way in shaping the conditions of a commodity market!

Very little change has occurred in quotations. Newsprint rules firm at between 7 and 7.50 cents per pound on standard rolls to transient buyers and around 6.50 cents on contract. Publishers are buying as far ahead as mills accept commitments and are taking as large tonnage as is to be had. Fine papers are quiet but quotably steady. Wrappings and tissues are holding their own and manufacturers are not pressing sales even though they are in want of orders. Book papers rule steady in price, and are moving into consuming channels in more or less consistent volume at a quotable basis of about 12 to 13 cents at mills for machine finished book. Boards are unaltered in price at $50 per ton at mills for filled news and $45 for plain chip, and demand, if anything, is on the rise.

Everything would seem to point to paper values having reached bottom for the present movement. Contract prices are holding firm and quotations on spot shipments have steadied to a marked degree. The entire trade is expecting a strengthening up of matters, in view of which it is not surprising that most sellers are waiting for buyers to come to them and that selling pressure is an almost invisible characteristic of the market.

GROUND WOOD.—Mechanical wood pulp prices rule steady to firm at around $100, or slightly less, per ton at producing plants for No. 1 domestic ground wood, and between $85 and $90 ex-dock for imported pulp. No transactions involving large tonnages of spot pulp have been recorded this week but inquiry continues good, and most of the supply offered is finding a ready outlet among consumers, who nevertheless are still cautious buyers while presumably not being in pressing want of pulp.

CHEMICAL PULP.—A distinctly firm undertone marks the chemical pulp situation and there is a decided upward tendency exhibited by quotations on most grades. Producers and importers generally express the belief that stocks at consuming plants are near depletion and that papermakers will soon be obliged to resume buying, and it is stated that recent experiences go to prove that available supplies of pulp are abnormallly light. Another factor developing this week which may have important influence on the market is a strike of marine engineers in Sweden which has almost completely tied up Swedish shipping. Traffic over the Baltic is said to have come to a virtual halt and steamship officials say they will cancel all sailings unless an agreement is reached immediately with the striking engineers. Should this difficulty exist for any length of time the movement of wood pulp from Sweden to the States would be severely hampered, and would further curtail supplies of foreign sulphite and thereby enhance the value of pulp held unsold on this side.

Quotations hold firm at around 10 cents for foreign bleached sulphite, 8 cents for domestic bleached, 7.50 cents for foreign easy bleaching sulphite, 7 cents for domestic easy bleaching, 5 cents for domestic kraft, 5.50 cents for Scandinavian kraft, and 5.75 cents for news grade sulphite.

RAGS—Although paper mills continue to purchase rags in guarded fashion and in comparatively small amounts, they are inquiring more freely than in sometime, which prompts dealers to adopt a stronger attitude relative to prices and offerings with the result that the market displays a steadier tone. Sellers report that they could easily dispose of much larger quantities of rags provided they were willing to accept orders covering future deliveries, but dealers for the most part are refusing to sell on today's prices unless mills agree to accept shipments at once, which situation reflects the belief of the average packer that values are due for an advance. No important change has developed in quotations. New No. 1 white shirt cuttings are priced at around 20 cents a pound f.o.b. shipping point., washables at 8 to 8.50 cents, new white lawns at 18 cents, new unbleached muslins at 16.50 cents, fancy shirt cuttings at 10.50 cents, No. 1 old repacked whites at 9 to 10 cents, third and blues at 3 to 3.25 cents and No. 1 roofing rags at a cent per pound.

PAPER STOCK—A moderate trade is current in old paper stock. Board mills in the New York vicinity have been in the market for larger tonnages of low grades this week and there has been some expansion of demand for certain of the better qualities, and although buying has not been of a scope having much influence on values, prices exhibit a firmer tendency. Newspapers

·TRADE·MARK·
REGISTERED

SOLE AGENTS in the United States, Canada, Mexico and Cuba for

Finnish Cellulose Association, Helsingfors, Finland

comprising all and every Sulphite, Sulphate and Kraft pulp mill in Finland, Manufacturers of superior grades of Bleached and Unbleached Sulphites, Easy Bleaching Sulphates and Kraft Pulps.

—ALSO—

Trade Mark

SOLE AGENTS in the United States, Canada, Mexico and Cuba for

Finnish Wood Pulp Union, Helsingfors, Finland

a combination of the foremost Ground Wood Pulp and Board Mills in Finland, makers of various kinds of boards and dry and wet Brown and White Mechanical Wood Pulp.

Get the most for your money by getting next to our qualities and prices!

WOOD TRADE LL MARK **PULP**

Lagerloef Trading Company, Inc.

18 East 41st Street, NEW YORK, N. Y.

Telephone: Murray Hill 4246-47
" " " 2170

INQUIRIES SOLICITED

are selling fairly freely to mills at between 60 and 70 cents per 100 pounds f.o.b. New York, and No. 1 mixed papers are bringing 35 to 40 cents a hundred. White blank news cuttings find a ready sale at 3 to 3.25 cents a pound at shipping points, and heavy No. 1 book stock is in better demand at a quotable basis of around 1.50 cents. Shavings continue to be mainly neglected and offerings by packers at 5.50 cents a pound for No. 1 hard white and 4.50 cents for No. 1 soft white shavings meet with little worthwhile response, while colored shavings have sold down to 1.50 cents per pound. Most dealers believe that a little livelier demand would be productive of a rise in prices, and are consequently careful about making commitments involving forward deliveries.

OLD ROPE AND BAGGING.—There is but a slight demand for either old rope or bagging and prices are largely nominal. No. 1 manila rope is available to mills at 4.50 cents a pound at shipping points, and No. 1 scrap bagging at 2 cents, and the probabilities favor buyers getting some supply at lower figures.

News from Our Advertisers

The Cleveland Stone Company.

The Cleveland Stone Company of Cleveland, Ohio, who are represented in Canada by Bouffard-Bergevin, New Birks Building, Montreal, P.Q., have just opened a quarry in West Virginia, to produce pulp stones under their brand "Ironsides."

The manufacture of pulp stones is not a new venture with this company. They produced a high grade pulp stone, one of the first produced in the United States from the year 1892 until 1906 when the "Ironsides" grit was exhausted. They have been searching since that time for a stone which they could consider worthy to bear the brand "Ironsides" and they are satisfied they have it now.

This stone has been subjected to every laboratory test known, with flattering results, and while they realize that the only positive test is the actual use in a pulp grinder, still, their long experience in the grindstone business generally justifies their belief that they have one of the best pulp stone grits produced on this continent or abroad.

They say the "Ironsides" grit more nearly resembles the English stone in all its characteristics than any other American stone. It has that peculiar toughness and hard grain cemented together by an open, medium soft matrix necessary for pulp grinding.

The Cleveland Stone Company have already begun quarrying and are now producing pulp stone rock. This quarry is well southward and is not effected by winter weather as much other quarries. They have four different grits in the quarry varying in texture and hardness enabling them to furnish stone suitable to grind the different grades of pulp required.

The Hall Machinery Company with offices in the Birks Building, 14 Phillips Square, Montreal, and at Sherbrooke, Que., handle a complete line of Pulp Mill equipment from the Slasher to the screens, including also conveyor, boilers, digesters, diffusers and tanks of all kinds.

Mr. Hall was formerly with the Jenckes Machine Company, and has had many years experience with the Pulp Machinery.

The Company represent in Eastern Canada, "The Engineering & Machine Works of Canada, Ltd.," St. Catharines, Ont., who manufacture the well known Tidmarsh line of Pulp Mill Machinery.

Lagerloef Trading Company, Inc., 18 East 41st Street, New York City, have issued an exceptionally attractive leather calendar and desk pad which they are sending to their friends in the trade. The fact that each recipient's name is stamped on the pad in gold gives this New Year's remembrance a particularly personal touch.

Mr. Paul A. Buss who has been connected with Port Arthur Pulp and Paper Co., Ltd., and Provincial Paper Mills, has joined the staff of Mr. John Corcoran, 510 Dominion Express Bldg., Montreal. Mr. Buss will cover the pulp and paper mills with machinery and supplies.

PROGRESS OF THE PULP AND PAPER INDUSTRY.

Exports of pulp and paper products continue to increase in value even more rapidly than the growing capacity of the mills would lead one to expect. The contract market for newsprint continues extremely strong, and we need not repeat here the considerations already set forth in previous issues, which convince us that it will remain so for a considerable time to come. A feature of the export figures of recent months, which are set forth in detail in the supplement, (See Pulp and Paper, Oct 14) has been the large growth and high price of the exports of chemical pulp, which is mainly employed in the manufacture, not of newsprint, but of high-grade papers. The chemical pulp

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Methylene Violet 2R. conc.
Methylene Violet 2B. conc.
Malachite Green Crystals.
Methylene Blue B.B. conc.
Methylene Blue 1814.

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Paramine Blue 2B.
Paramine Black B.H.
Paramine Yellow R.
Paramine Brown G. conc.
Paramine Brown M.
Paramine Fast Bordeaux B.
Paramine Green G.
Paramine Violet N.
Paraphenine Yellow G.
Diazamine Fast Yellow H.
Rosophenine 10B.
Benzopurpurine 4B.
Paper Black 3181

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industry is one in which technical skill is as important as the supply of raw materials. The Canadian chemical pulp industry has now expanded in size and improved in organization to a point where it can and does attract the services of the ablest experts of the world. Its products now rank on an equality with those of its oldest and ablest rivals.

The next development in this direction will naturally be the further manufacture of this chemical pulp into high-grade papers; for the situation is closely similar to that of the newsprint industry on this continent, and the American market is, or will shortly be, in the same state of dependence upon this country for high-grade papers as for newsprint. The economic superiority which Canada possesses is due not only to proximity to the American market, but to its possession of an unrivalled combination of pulpwood supplies in great quantity and water powers of ample size and cheap development.

A charter has been granted to Ye Paris Printer Shoppe, Limited, with head office at Paris, Ont., and a capital stock of $40,000 to carry on a general printing and publishing business. Among the incorporators are Chas. C. Nixon, Francis H. Harris, of Toronto.

According to a provincial charter just granted to the United Growers' Packages, Limited, with head office at Niagara-on-the-Lake, the company, among other things is authorized to engage in business as pulp mill owners. The capital stock is $75,000.

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Pulp and Paper Magazine

OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XVIX. GARDENVALE, P. Que., January 20th, 1921. No. 3

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J. NEWELL STEPHENSON, M.S., Editor.

The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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Changes of advertisements should be in the Publishers' hands ten days before the date of issue.

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-:- EDITORIAL -:-

THE SUPERINTENDENTS' ASSOCIATION.

One of the most important recent developments in the Pulp and Paper Industry, is the organisation of the Pulp and Paper Mill Superintendents' Association and the coordination of that association with the American Pulp and Paper Association. There is a distinct field for just such work as can be done by an association of the men who have charge of the actual manufacturing processes in our mills, and nothing is more conducive to the progress of the industry than to provide opportunities for these men to sit down together and discuss subjects of common interest. Because one man gives another his ideas regarding some feature of the business and in return gets his neighbor's method of carrying out some other part of the process, does not by any means indicate that the two mills where these men work will be conducted along identical lines or that their costs of manufacture or the qualities of their finished product will for that reason be identical. These points have been remarkably well expressed in the temporary chairman's address on the occasion of the organisation of the Eastern Canadian Superintendents which appears in this issue. Mr. Argy has not only laid at rest the principal objections that have been raised to such an organisation, but has clearly shown the great advantage that can result from such opportunities for superintendents to confer together.

One of the most striking features of Mr. Argy's remarks is the emphasis which he lays on the function of the superintendent in being the connecting link, or perhaps better, the interpreter between the management and the men. It will be a sad day for the industry if this ever ceases to be so. The superintendent must of necessity be familiar with all of the manufacturing processes, usually by having himself performed most of the operations in the mill. He is thus able to direct the mill work most effectively and as he has served his time in overalls, is perfectly familiar with the severity and hazard and working conditions at every stage in the process and is thoroughly familiar with the attitude of the workmen because he has seen every part of the mill through the workman's eyes. Perhaps early in his overall days he has held a somewhat cynical or perhaps even antagonistic attitude towards the men who had by hard work and self-denial accumulated sufficient capital to establish the mill which provided him an opportunity to work. As superintendent he comes closely in contact with these men and discovers how really human they are and that they have the welfare and prosperity of all their employees very much at heart. He is able to carry to the workmen something of the atmosphere and attitude of goodwill which prevails at the office end, and consequently, as Mr. Argy has stated, the superintendent is one of the three legs which, equally with labor and capital, support the stool of industry.

Lack of space in this issue unfortunately prevents printing at this time, all the excellent papers that were read at the superintendents' meeting. Our best wishes are extended to them for the success of their organization and may their tribe increase.

GOD'S WORK.

In the Pulp and Paper Magazine for January 6 we made an appeal for gifts to help keep from starving a few of those in famine stricken Europe and China who will surely die unless we help them. It is a pleasure to acknowledge an immediate response from Mr. O. W. Hovey of Fraser, Brace, Ltd. His check has been transmitted to headquarters. Most of our pulp and paper companies are constantly giving generously, as are many individuals in the industry, to such worthy causes as this.

We have omitted mention of the heart-melting pictures of pitiful want that urge us to speak of this opportunity to prove the Christianity of Canada, but we know that there is not a man among our friends in this industry, who could watch a small boy trying to crack a bone that he might ravenously lick out the bit of marrow and not gladly give the $10 that would keep life in that little body till the next harvest.

COBWEBS.

The Paper Makers' Journal is again urging the establishment of an association of manufacturers and workers in the Pulp and Paper Industry for providing out-of-work insurance, death benefit insurance, and an unemployment bureau. Such a movement must assuredly deserves success. We stand ready to help.

Canadian Santa Claus Fairbanks-Morse has been round again. This time the remembrance is a penknife with stainless steel blades, a feature that will be appreciated at those times when we don't have time for breakfast before leaving for Montreal and grab an orange to eat on the train.

Out of gas.

Superintendent is the Keystone of the Industry

In opening the meeting M. J. Argy, of the Cliff Paper Co., Niagara Falls, N.Y., our temporary chairman, said:

We are assembled here today to inaugurate the first Canadian Division, to be known as the Ontario Division of the American Pulp and Paper Mill Superintendents' Association. While a meeting of this character has been contemplated for some time by our National Association officers, circumstances over which they had no control, have prevented them from complying to the numerous requests of the Canadian membership for a division on this side of the border.

Our National officers are serving without salary and as they are all Superintendents of large enterprises, you can readily realize that it is not possible for them to leave their work at too frequent intervals. In order, therefore, that this meeting should not be delayed any longer, our worthy president, Mr. Boyce and the Executive Committee, after having consulted the Canadian members who were present at the Chicago convention, decided upon this date for the meeting and he appointed a Committee to make the necessary arrangements and bring to realization the wishes of the Canadian superintendents.

I have the honor of being appointed Temporary Chairman and represent the Executive Committee at this meeting and I will endeavor to fulfill the duties to the best of my knowledge and ability.

Now in regard to the Superintendents' Association, I do not know how I could possibly explain its ideals and what it stands for in as good or as clear a manner as does the emblem on the cover of the book you have in your hands, which typifies the Superintendent as the keystone of the arch of industry; the connecting link between management and production, between capital and labor and supported upon the foundation of confidence. Here you have in a very concise form the ideal for which our Association stands—to develop its members so that each individual Superintendent may be a fitting keystone to the industrial arch of the Company by whom he is employed.

The Superintendents' Association idea is not a new fad by any means. It has been tried for many years and in many countries and has proven itself of great assistance to the industries that have adopted it.

The first organization of this character in America, was instituted by that canny Scotchman Andrew Carnegie, who organized all his Superintendents into a club or association. Several weeks after this Association had been perfected and upon his suggestion, a trip was taken by this body, to the heights overlooking the Pittsburgh manufacturing district. After they had reached the summit and had had sufficient time to visualize the wonderful industrial empire that stretched before them, a sight which many of you are well acquainted with, he turned to them and said "Here before you is spread the greatest basic industry in the world and each and everyone of you is an integral part of this industry. This is all yours if you wish it. Yes, you can be more powerful than all the crowned heads of Europe and all you need to accomplish this is to have confidence—confidence in your industry, in your Association and in one another."

Gentlemen, to paraphrase our dear old friend Andy, I may truthfully say that the third greatest basic industry lies before you and it is yours if you wish it—if you have the confidence that it is a great industry—confidence in your Association and confidence in one another.

A Superintendents' Association in our own particular industry has long been talked of but owing to the numerous duties, the isolated position in which the majority of the Superintendents have been placed and the small amount of leisure time at their disposal its earlier materialization has been prevented, but the propaganda of a Superintendents' Association which was spread by such men as Bill Fogarty and Fred Boyce did not fall on barren ground, so that when finally the opportunity was offered at Appleton, Wis., in June of 1919, the idea of an American Pulp and Paper Mill Superintendents' Association, that had been in the air for so many years, was given an opportunity to crystalize and this crystal has been growing almost miraculously ever since, until now it is one of the principal jewels in that crown of the paper industry—The American Paper and Pulp Association. Since that first meeting we have developed from twelve Superintendents to an Association having five Divisions and three hundred members and all this was accomplished in the short space of one year and six months. You can, therefore, realize that the Association has fulfilled a need in our industry and just so long as we follow the policies laid out by the Executive Committee up to the present time, endeavor to do the greatest good for the greatest number, there is nothing that can prevent us from being even more successful.

The programs at our various divisional meetings are on a smaller scale but identical with the conventions held by the National Association and consist of papers and addresses by members of some of our standing committees and the best authorities we can obtain on subjects that are of lively interest to all pulp and paper mill superintendents.

These meetings will not make a paper maker of the layman, nor of the man who knows little or nothing about his own industry and endeavors to keep that to himself; but to the superintendents who are paper makers, there is no doubt but that they are made better paper makers by attending our meetings. If you are thinking of joining the Association with the one idea in view of getting all you can out of it and giving nothing, your are sadly mistaken, as under no conditions can you get something for nothing. You will get out of this Association just what you put into it and it is by this mutual exchange of knowledge that the Association has been enabled to make the wonderful progress it has.

One of the subjects that we have had presented to us at several of our meetings in the past and which I am pleased to note is on the program for this afternoon, is "Industrial Relations." While this is not a technical paper making subject, it is one of the most important questions that could be discussed by men who are directing the efforts of thousands of workers. You indeed are the keystone of the industrial arch. Upon one hand you have capital, which is placed in your hands by the officers of the company that you represent. You have the disbursement of this capital and must, if you are to be successful in your chosen field, show a profit upon the capital expended by you. On the other hands you have labor. You must make this labor productive and earn dividends for your company; at the same time see that they are given their just share and sell them the idea that they are not working for the company but "with it." You indeed hold responsible positions, not only with your industry but with society at large, especially during this period of readjustment, when the smallest spark may set all civilization back a hundred years.

The time for the Czar and autocrat in industrial affairs is past. It is the man who can direct big business and at the same time take into consideration that the most menial worker in his organization is a human being, who is the real leader in industry to-day. There are bound to arise differences of opinion between yourselves and the men whom you employ and if you bear in mind, when a situation of this kind confronts you, that the other fellow is also human and that none of us are infallible, you will get together with your men and discuss with them the points at issue, — not through any intermediary or third person of any kind, but get together with the men themselves. Put your feet under the same table with them and you will be surprised how quickly the differences will disappear.

Industry is well represented by the three-legged stool — with Capital, Labor and the Superintendent representing the three legs, and the whole is no stronger than the weakest of the three. If each one of these three divisions are held firmly together by the strong bond of common interest, there is no doubt but what the industrial organization represented will be very sturdy.

On the subject of Industrial Relations, the Superintendents' Association is of particular value to the Superintendents. It gives you an opportunity to get together and know that the Superintendents of other mills are common ordinary fellows like yourself and are not trying to steal all your help and make labor conditions in your locality as unstable as possible by constantly granting some concessions to their help.

At the various divisional meetings this subject is discussed very frankly and thoroughly, and all the rumors of what the other mill was doing, which perhaps was causing your mill to be a hot bed of discontent, are thoroughly discussed.

Bill Jones will ask Tom Smith whether it is true, as has been rumored around his mill, that he was going to give machine tenders $5.00 an hour. Tom Smith will ask Bill Jones whether the rumors that he heard at his mill is true that the hours were going to be cut to three and a half a day and two hours for lunch. In this way the Superintendent is given the opportunity to combat any ill rumors that may hurt the morale of his organization and should something of this character arise between meetings, he will consider himself sufficiently acquainted with Bill Jones to call him up on the telephone and ask him if it is true; so you see that the advantage of membership in the Association is not limited to the information you may receive in regard to making better paper cheaper, but will assist you in many other ways and make all of you much more valuable to the company you represent.

Now the success or failure of any organization, while it may be settled on to the shoulders of the officers who are directing its affairs, rests really upon the membership body itself. You are given the opportunity of selecting the officers that are to direct the destinies of the Ontario Division and it is upon your selection of the right calibre of man for the positions of Chairman, Vice-Chairman and Secretary of this Association that will spell its success or failury.

In closing I wish to impress upon you the importance of the selections you are about to make for the officers of this Division and I hope that you will endeavor to make your choice with the one idea in mind that responsibility for the success or failure of the Ontario Division rests individually upon each and everyone of you.

SIR WILLIAM GAGE IS MOURNED.

The death is announced in Toronto of Sir William Gage, well-known as the founder and head of the William Gage Publishing Co., on Spadina Avenue, and for some years prominently associated with social betterment movements. The late Sir William Gage was born in Peel County in 1849 and was educated at Brampton High School and Toronto Normal School. He taught school for several years and in 1874 he entered partnership with Adam Miller & Co. in the publishing business, which later changed to the present firm name of W. G. Gage & Co., of which Sir William had been president since 1876. He was president of the Educational Book Co., of Toronto; president of the Kinleith Paper Mills, St. Catherines; director of the Imperial Bank and vice-president of the Chartered Trusts & Executors. The deceased was known most widely through his interest in the relief work for consumptives. He was the founder of the King Edward Memorial Fund of one million dollars for consumptives in 1912 and was founder and president of the National Sanitarium Association. Only just recently he personally applied to the city for funds to assist with the rebuilding of the burned Muskoka Hospital. It was in consideration, largely, for his splendid activities along philanthropic lines that he received his knighthood from the King.

The good Lord gave every man so much brains, but the brains that he gave to some people in this world are somewhat like swampy land—it doesn't produce much.

Mill Superintendents Organized at Niagara

Canadian pulp and paper mill superintendents are now organized as part of the American Pulp and Paper Association as a result of an enthusiastic and well-attended meeting held at the Clifton Hotel at Niagara Falls, Ont., on Jan. 8th. It has been originally intended to make the branch an Ontario one but it was generally felt that the ends of the organization would be better served by including the whole of Canada, and allowing the different sections to organize individually if they saw fit, as part of the Canadian section. The new organization therefore comes into existence as the "Eastern Section of the Canadian Division of the American Pulp and Paper Mill Superintendent's Association" and in the meantime it will be all-Canadian as far as membership is concerned. The parent organization is the American Association which is composed of both Canadian and American mill superintendents. It was emphasized in the discussion that there should be no line between Canadian and American members, for, as was pointed out, the parent organization is international in its scope, the American Pulp and Paper Association including in its membership men engaged in the trade on both sides of the international boundary.

The Canadian Division starts out with an efficient and enthusiastic executive. The chairmanship went to William A. Anderson, of the Kinleith Paper Mills, St. Catharines, Ont., and W. E. Ziemann, of the Abitibi Power and Paper Co., Iroquois Falls, was made vice-chairman. The secretary is C. Nelson Gain, of the Don Valley Paper Company, Toronto.

The Pulp and Paper Mill Superintendents before the camera at Niagara Falls, Ont.

The gathering was presided over at the start by the temporary chairman, M. J. Argy, of the Cliff Paper Company, Niagara Falls, who, in an excellent address outlined the aims and objects and the work to be accomplished through the organization of the Canadian branch. Mr. Argy described the mill superintendents as the keystone of the industrial arch extending between capital and labor and referred to the fact that the first organization of mill superintendents had been formed by the late Andrew Carnegie. Other papers read included on "The Paper Machine—Its History and Future Development" by Stuart D. Lansing, President of the Bagley and Sewall Company, Watertown, N.Y.; "A Plea for Accident Prevention" by A. P. Costigane, Secretary of the Ontario Pulp and Paper Makers' Safety Association and "Drying Paper: Temperature Control; Fuel Saving" by F. C. Farnsworth, President of the Farnsworth Co. of Canada. In addition there was a brief address by F.W. Monaghan, of the Bagley & Sewall Co. of Watertown, N.Y., who at one time ran a one-thousand-feet-a-minute paper machine at Mosinee, Wis., and who predicted that some time in the future paper would be turned out of the machines at a mile a minute, although it might not be within the lifetime of his hearers.

A pleasant and enjoyable feature of the gathering was a banquet on Saturday night which was presided over by Chairman Anderson, with Mayor Battle of Thorold as toastmaster. Brief addresses were given by a number of the mill superintendents, with orchestral and vocal music in between.

Among those present at the meeting were the following:

J. J. Herb, Interlake Tissue Mills, Merritton, Ont.
G. Bradley, Alexander McArthur & Co., Montreal, Can.
W. A. Anderson, Kinleith Paper Mills, St. Catharine. Ont.
George K. Walker, Finch Pryne & Co., Glenns Falls, N. Y.
Edward Simonson, Buffalo.
S. Byrne, Riordon Co. Ltd., Merritton, Ont.
E. D. Burgess, Garden City Paper Mills, St. Catharines, Ont.
M. J. Argy, Cliff Paper Co., Nigara Falls, N.Y.
Dan Daverin, Provincial Paper Mills Ltd, Thorold, Ont.
Alexander Beique, Canada Paper Co., Windsor Mills.
Frank McHenry, Belgo & Pulp & Paper Co., Shawinigan Falls, Que.
William White, Fairbanks Morse Co., Montreal, Can.
G. J. Armbruster, Lincoln Paper Mills, Merritton, Ont.
W. H. Brydgess, Defiance Paper Co., Niagara Falls, N. Y.
Fred J. Rooney, Upson Co. Board Mills, Lockport, N. Y.
L. N. McIntyre, McIntyre Brothers Paper Co., Fayetteville, N. Y.
F. C. Farnsworth, President, Canadian Farnsworth Co., Toronto.
C. Nelson Gain, Don Valley Paper Mills, Limited, Toronto.
A. P. Costigane, Secretary, Ontario Pulp and Paper Makers Safety Association, Toronto.
F. W. Monaghan, Bagley and Sewall Co., Watertown, N. Y.
Steward D. Lansing, Bagley & Sewall, Watertown, N. Y.
W. E. Ziemann, Abitibi Power and Paper Co., Iroquois Falls, N. Y.
John F. Kilawee, Ontario Paper Co., Thorold
William H. Rose, agent Farnsworth Co., Toronto.
W. E. Pickard, Hammermill Paper Co., Erie, Pa.
J. A. Bowers, Hammermill Paper Co., Erie, Pa.
Carl G. Thurman, New Hartford.
K. S. MacLachlan, Lincoln Paper Mills Co., Ltd., Merritton, Ont.
J. G. Dunn, Ontario Paper Co., Thorold, Ont.

WHAT DEMURRAGE COSTS.

Over 71,000 days of Demurrage Were Charged on Freight Cars in Canada in the Month of June last Year.

This means 71,000 car-days wasted over and above the usual 3 days free time allowance for loading, unloading, and clearing the Customs.

The sum paid by shippers for this demurrage was $186,791—or say $2,000,000 a year!

This is only a Fraction of the Loss Involved!

There are in Canada about 200,000 freight cars available for 30 days per month, or, in railway parlance, 6,000,000 car days. Approximately 71,000 of these are accounted for by the above-mentioned delays, or say 1.1 p.c. of the month's freight carrying capacity of the Canadian railways.

While these delays do not occur simultaneously, the effect in the end is as expensive as would be the total cessation of freight loading in Canada for a period of, say, four days each year.

Conversely, if such delays did not occur (and most of them not occur), the railways would be in a position to move theoretically about 1,300,000 additional tons during the year.

Watch your demurrage bills, see that your Head Shipper trims them to the lowest point, and if possible release your cars even a whole day before the margin of the free time has expired.

Sometimes it does apparently pay you to pay demurrage. By waiting a few days you may be able to use your own trucking facilities at a time when they would otherwise be idle. It is quite true you do not desire to get your truck driver into the habit of thinking that outside help may be called in whenever there is rush of work.

But may we suggest other considerations that should come into effect?

Your delay is contributing to a car shortage that may come back against **you** next week or next month!

The car you hold out of service to-day may be the car someone desperately needs—or that you yourself may be eager to obtain next week or next month!

Demurrage bills **never** pay.

Not only is this true, but it will be a sign of high public spirit on your part if, in addition to cutting out demurrage, you will **actually unload your cars before the limit of free time has expired.**

You have now practically three days' free time, including 24 hours allowed for Customs purposes.*

Will you not co-operate by releasing your cars if possible within the first 24 hours after receiving them? Do not use the full limit of free time if you can help it.

You will be assisting the railways to give you good service and you will be saving actual money to yourself if you put your best "watch-dog" on your demurrage bills and if you urge your Head Shipper along the lines just indicated.

To watch your demurrage bills will require only half an hour or an hour's time once a month! But it will remind your staff that nothing is overlooked by your Management.

MORE POWER AT PORT ARTHUR.

The photograph depicts Mr. Brackinreid, as Mephistopheles, representing Hydro Electric Power, presenting "Optimism," Miss McTeigue, at Port Arthur Ont., part of a clever playlet portraying the electrocution of Pessimism and birth of Optimism in connection with celebrating, on New Years' Day, the turning on of Hydro Electric Power from the Development in the Nipigon which makes available for Port Arthur, a large surplus of electrical energy to take care of her fast growing requirements industrially, among which are several pulp and paper enterprises, 72,000 h.p. a portion of the 300,000 h.p. possible of development, becomes available by this enterprise. The power was turned on December 20th. On New Years' Day Port Arthur duly celebrated this event with the Carnival and Masquerade, the whole show ending with the playlet "Death of Pessimism and Birth of Optimism."

Announcement was made during the celebration of the proposed expansion of the Provincial Paper Co. Ltd., doubling their present pulp output and adding paper manufacturing, also the successful conclusion of the plans of the Shuniah Pulp & Paper Co. Ltd., a 100 ton pulp proposition, and the proposed expansion of the Kaministiqua Pulp and Paper Co. Ltd., to 100 tons, expansions which will employ an additional 1000 men in Port Arthur's industrial life.

1921 surely ushered in bright prospects for Port Arthur, Ontario.

Mr. James Logie, Front Street, W. the popular Toronto representative of the Canada Paperboard Company, Limited, has had the principal points in Ontario added to his territory and will cover the trade in the district at frequent intervals.

HEAVY CHEMICALS, CANADIAN MARKET,

Toronto, Jan. 15, 1921.

Soda Ash.—Small lots 3-3½ cents ex store, 2.8 cents car load lots, Amherstburg. The price has been set for this year and the market is becoming quite firm.

Sulphuric Acid.—Market quite unsettled. $22.00 per ton ex works is quoted today.

Alum, English.—Steady. $4.40 per 100 cwt. Toronto and Montreal in small lots.

Salk Cake, Muriatic and Bleaching powder.—Market rather unsettled, tendency to slight over production. Salt cake is quite weak.

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* So acute is the car situation, especially in regard to coal, that the Department of Customs has arranged to release incoming cars of coal so that you may begin unloading them before entries are passed, provided only that you file the necessary papers with the local Customs officer. Thus in case of coal delays in the Customs should be eliminated.

PAPER AND FORESTS.

The paper problem of the United States is primarily a forest problem.

The paper industry of the United States is now concentrated largely in the coniferous forest belts of the Great Lakes, the northern Alleghenies, New York, and New England. Twelve years ago these forests furnished all of the raw material for the industry. Year by year, as they have been depleted, the adjacent timber belts of Canada have been drawn upon until now a full third of our paper or paper-making materials comes from the Dominion. The pulp woods left in the Northern and Eastern States can not last, under the present rate of cutting, more than 15 or 18 years. The spruce forests of Canada will continue to furnish pulpwoods for a longer period but in their turn are no less exhaustible. Meantime our consumption of paper is steadily increasing and now exceeds 35 pounds per year for every man, woman, and child in the country.

Paper Shortage World-Wide.

The rest of the world is in the same situation. Nearly everywhere the progress of civilization has been marked by an increased per capital consumption of paper: and nearly everywhere paper is short. From far-off Australia, from China, from Japan, and from South America are coming demands upon the paper-making resources of the North American continent. Large publishing houses of England are acquiring pulp factories and forests on this side of the Atlantic. Confronted by a world hungry for paper the United States will indeed find a foreign source of supply a broken reed upon which to lean.

What, then, is the answer? The New England and Middle Atlantic States contain 31 million acres of heavily culled or logged-off lands. The Lake States contain 33 million acres of logged-off forest. Here are 64 million acres of timber-growing land within a stone's throw of our paper mills, land which could supply these mills several times over with pulpwood if they were but kept at work growing it. In the application of forestry to these enormous areas, much of which are now practically waste land, lies the only effective solution of the national paper problem in the future, as well as the problems arising from shortages of other essential forest products. There is no situation that emphasizes more clearly the need for a national forestry policy, enlisting the owner of the land and the public alike in the restoration of these areas to producing forests.

Western Resources Should Be Drawn Upon.

There will be a gap, of course, between the end of the old forest crop and the beginning of the new. To fill that gap and at the same time distribute our paper industry in a much more logical relation to the resources of the country as a whole, we must turn to the paper-making woods of the West. The Western States contain easily 400 million cords of paper-making woods, and southern Alaska contains another 100 million cords. With 5-cent newsprint in our principal paper markets there is no fundamental reason why these western resources should be drawn upon for a national supply as well as the local requirements of their own States.

While the pulpwood forests of the West offer an immediate opportunity to increase the production of paper on American soil and will contribute largely to our future supply, it is undesirable from every standpoint that the paper industry should eat itself out of existence in the Eastern and Northern States. And there is no reason why a large paper industry in our eastern forest regions should not be permanent, supported by raw material produced wholly within our own borders. All that is required is the intelligent use of land for the production of timber when not suited by its nature to more valuable products.

Regulation of price, control of distribution, restraint upon profiteering, however necessary as temporary expedients, will not solve the paper problem. There is but one effective solution—increased production of paper and continuous crops of the raw material whereof it is made. Our need for paper to-day is simply one concrete measure of our need for a national forestry policy.

HOLD ON!

Those who invested their earnings in luxuries during the past two years will now find themselves without any money in the bank, and in thousands of instances without a job. One labor leader started a factory to make silk shirts and neckties for laboring men, and the doors of his mill are now closed. Those men who turned their chicken yards and gardens into garages will now wish that they had had a little more foresight. "More than 1,000 employees of the Inland Steel Company, Indiana Harbor, have been laid off for lack of orders." "The employees of Anawan Mills, waste manufacturers, and of the Ereo Company Spinning Mills, Fall River, Mass., have agreed to accept 15 per cent. and 20 per cent. reduction in wages respectively in order to keep the plants in operation." "At a meeting of Georgia, Fla., Sawmills Association, comprising the biggest operators in two states, it was decided to cut wage for common labor in the mills to $2.50 per day and proportionately, beginning November 8th."

During the past six years there has been an army of men who have travelled from one end of the continent to the other, working in this mill and that for short periods of time, saving up enough money to go to another mill. Thousands of men today are out of employment in Montreal and Toronto. Money is tight. It is almost impossible to secure it except at very high rates in a great many instances. The time has arrived when a man who has been a steady employee in any company over a period of years can look with more or less pride upon the fact that he has remained a steady man when the temptation was present to flit about. A man who has a job today will do well to hold on to it. It looks as though is would not be very long before there will be more than one man for every job. We have in the Spanish River Company 400 men who have worked for the Spanish River Company between five and ten years. Five years from now we should have twice that number. Long and steady service is valuable to the man and to the company. Hold on to your job.

Thus saith the Spanish River News. Better advice could not be given at any time. The world has too many drifters.

The next event to look forward to will be the annual meeting of the American Paper and Pulp Association in New York. Let's see if the Gothamites can beat Montreal for a paper convention work.

Speed Inter-Lock as Applied to the Paper Machine*

By F. G. WARBURTON, Harland Engineering Co.

In regard to the time considered desirable for reading a paper before the Technical section of the Canadian Pulp and Paper Association, I have confined my remarks, as far as possible, to mechanical considerations and the general effect of same on the production of paper, referring as briefly as possible to allied subjects such as thermo-dynamic mill efficiency, which fascinating subject alone could easily take up the whole of the time available.

Almost every paper machine in the world today has some form of belt, or rope and belt drive. Over a considerable number of years in various countries attempts have been made to drive paper machines sectionally by individual electric motors. In the past the result has been the same in each country, generally a pitiful failure, sometimes after really heroic struggles, to save the drive. Why this desire for some other form of driving? What has impelled men in the past all over the world to depart from accepted practice in the driving arrangements of the paper machine? Not, I think, simply the desire of change, that does not square with human psychology; was it not because they realised at least some of the imperfections of usual drives, dirt, danger, power consumption, stoppage, maintenance, etc.? I suppose, having motors in the rest of the mill, they realized the great advantages of individual motor drives. Whatever may have been the prime reason in each particular case, collectively there is no doubt that the desire for change reflected dissatisfaction with drives existing, but, unhappily for manufacturers and for the industry, in the state of the art as it then was, they were indeed "Out of the frying pan into the fire." They had not their troubles to seek.

I sometimes wonder where the ignorance lay. Was it a lack of knowledge of the accuracy of speed regulation required as between the sections; or, was it a disregard of the inherent characteristics of motors on the part of those responsible for such installations? In practice, the performance of the paper machine with uncontrolled motors was worse than with belts, and no wonder; the marvel is that such installations allowed paper to be produced at all. In brief, a variable speed motor "uncontrolled," can, between full and no load, have a speed characteristic as much as 50% bad. I will show later how such a motor, or collection of motors, controlled by the "Inter-lock" are made to act as though they had speed characteristics 100% perfect. Before doing so, however, I wish to analyse present driving arrangements, in other words, mechanical drives in which at last one belt is used per section. Various names are given to such drives, e.g., "Marshall," some have no names,—perhaps just as well!

The drawings of a modern 166" paper machine by a well-known builder, so modern that the machine is still being built, showed five links of transmission between the couch and press rolls and the prime mover, each comprising one rope, three belt, and one gear connections, the other sections had less links.

Let us consider the action of a single belt under working conditions. For the moment we will consider only flat pulleys, or pulleys having a slight crown. Later, we will consider the special case of cone pulleys. Power is transmitted by a belt due to tension difference between the two sides of the belt. When at rest, with no torque or resistance to torque, the tensions on each length of the belt are equal, but directly the driving pulley commences to exert torque the tensions on the top and bottom sides of the belt are no longer equal, and, as soon as the difference in tensions becomes great enough to overcome the resisting torque, motion commences. When running, all other things being equal, the amount of power transmitted by a belt is directly proportional to the difference of tensions.

Which of us, having a prime mover with a pulley 24" diameter, running at 500 revs. and a driven shaft that we desire should run at 500 revs. would put on the driven shaft a 24" inch diameter pulley? Some of us, perhaps, in our early days tried. Those who did, found, as I did, in my early days on the test-bed, that it cannot be done. We got into the habit of allowing that the driven pulley should be a few per cent smaller in diameter than the driver as compared with the arithmetical ratio of diameters and speeds.

Why is this necessary? Where the difference? The difference is made up of two factors, stretch and slip. A belt, like all other materials, has a coefficient of elasticity, and with every strain there is a relative elongation, and the greater the strain the greater the elongation. As seen above the strain on one side of the belt is greater than on the other side of the belt when driving is taking place, and so one pulley is receiving a greater length of belt than is being received by the other pulley. To compensate for this the driven pulley runs slower. This factor may be described as stretch or creep. There is still another factor which causes the driven pulley to run still slower than if only creep came into consideration—"Slip."

Now the other factor, "Slip." I apologise for bringing authorities to bear on the slip factor. My justification is that I have been told several times by well-known men, some engineers, that there is no such thing as belt slip, but only creep, that there would seem to be the need.

Unwin "Elements of Machine Design" (1919 edition), says:—"The earlier writers assumed that there was no slipping of the belt on the pulley, and that if slipping occurred the belt would cease to drive. So far is this from being the case that there is always some slip of the belt."

Again, "A belt is not used in cases where a very exact velocity ratio is necessary."

Lewis, Tran. Soc. M. Engrs., Vol. VII. "The usual slip in driving may be 1% each pulley, i.e., 2% altogether. At 10% usually the belt throws off."

Imagine 10% stretch!

Professor Lanza. (Trans. Am. Soc. Mech. Engrs. VII 374) shows that the coefficient of friction itself between the belt and the pulley depends on the amount of slip, and that whereas with a 1% slip on a pulley the coefficient of friction was ·33, at a slip of 14% the coefficient had risen to ·82.

Professor Sawdon, M.M.E., of Cornell University, is the only other authority that I will quote. Some of you may have read Prof. Sawdon's paper entitled "Test of the Transmitting Capacities of Different Pulleys in Leather Belt Drives," read before the National Association of Cotton Manufacturers, Sept. 29, 1911. Prof. Sawdon claims that the eleven months of testing at Sibley College, Cornell University, are perhaps the most thorough tests ever taken on belt slip and creep. No less than eleven months of steady testing, during which 9,000 observations were taken on a machine especially constructed to measure slip and creep, etc.

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*Paper read at the Annual Meeting of the Technical Section of the Canadian Pulp and Paper Association, Montreal, Jan. 19 and 20, 1920.

He says, "By taking continuous observations of slip over long intervals of time, with the machine running under constant conditions of tension, brake load and speed, data was collected and curves plotted between per cent of slip and time. Those on Figure 3 are typical."

("Figure 3" was shown as a slide).

Most of us, I fancy, would expect over a period of thirty minutes, that with a constant load, slip and stretch would be nearly constant. Look at the curves, the load a pony brake, no workshop conditions, no mess, no oil around, no steam, and yet we see, that with a dead load, the slip varies over a period of 30 minutes between ·5 and 15% on the top curve, and on the bottom curve between 1% and over 10%. Our authority says that these are perfectly typical curves. "From these it would be seen that the slip is continually varying. By comparing a large number of such curves, it was found that this variation takes place through no clearly defined cycle." Had the belt speed during test been high, one might have suggested air pockets, but the conditions of test prevent any such thought; the belt speed over all tests was low, 2,200 F. P. M.

Let us now look at a condition of load variation. On page 19 of this pamphlet we find, reduced to figures, the average of eleven months' work. Let us take one class only on account of time, a load increase of 20%. The belt is supposed to be normally loaded after the 20% increase, i.e., ratio T/t 3·57, a very normal figure. The slip has changed from 2·26 to 3·29%, i.e., more than 1% change.

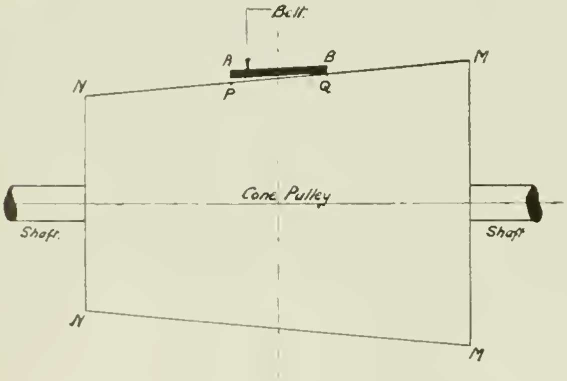

Fig. 1.

Now let us consider the condition above on the paper machine itself. The sectional draw is set at less than 1%, perhaps at ·5· A 20% change of load takes place, such as is caused by the addition of weights or increase of bearing friction, we find that the slip has changed on the section 1%. But the draw was only at the most 1%, therefore, the draw has changed 100%. If we used ·5 figure for draw, the change of draw would of course be 200%.

We have all seen this in practice. Many have smoothed out this annoyance by altering the draw handwheels along the whole machine until this un desired draw was stroked out. Consideration of the Sawdon curves clearly shows that even a change of load is not necessary to alter the speed relationship between sections, but the peculiarities of belt performance will do all this without load change at all. All the more credit to the operators, who by skill of eye and hand, beat out such belt transmission peculiarities.

Just a moment, on Cone Pulleys. The pulley shown in Fig. 1 is the driven pulley. The smaller diameter is NN, the larger MM. The belt AB and the points of extreme contact P Q. Now points NPQM are all making the same revolutions per minute, but point M is making a greater peripheral speed than N, and in like manner Q a greater speed than P. But the point of the belt A is making the same linear speed as the belt point B. Now we know that normally the intensity of contact at BQ is greater than at AP. Suppose that the centre of driving force of the belt is located at the point BQ, then the slip at AP must be very great. On the other hand, suppose that the centre of driving is towards A, but nearer to B, then we find that the point of the pulley most closely in contact with the belt viz. Q is running faster than the belt, and that the pulley at Q, so closely in contact, is actually trying to drive the belt, although this is the driven pulley we are considering. Look at "cone pulleys;" see the point "Q" bright, and a little way down a dull portion, and then again bright and then again dull. A battle of friction, positive and negative, not very efficient! a method of giving constant draw! it is used as such. When discussing flat pulley drives once with a paper maker, I was told "the best paper is made on machines with flat pulleys" on the face of which paper is stuck. Is there any wonder?

Fig. 2.

Since writing the above, I have been fortunate in obtaining a photograph of a new cone pulley where the battle of frictions had not had time to wear out the tool marks all over the pulley, the draw at that time had not been changed, and so we can see all the bright and dull spots as discussed above in a most illuminating fashion. The pulley shown in Fig. 2 is the reel pulley on No. 8 Laurentide Machine, the time of running only a matter of days to run in the bearings, load light, the initial tension that usually put in by mill mechanics—rather severe! Could a tale be more clearly told than this picture tells?

Let me say also that I was able to push a 15/1000 feeler a considerable way in between the belt and the pulley at the small diameter end of the pulley, in spite of the high initial tension.

It is quite easy to make both edges of the belt grip the pulley with almost equal intensity by setting the pulleys out of alignment as referred to a line at right angles to the two shafts and running though the centre of each pulley, both shafts still being parallel to each other. Let us call this a positive direction of staggering the pulleys; what do we find in practice? The staggering is done in just the opposite direction, and instead of bringing each edge of the belt into closer contact with each pulley, actually an attempt would appear to be made to accentuate the gap on the narrow end of each pulley, evidently it has been found that the battle of forces is too great even when the pulleys are set in a normal fashion without staggering, for all over the world cone pulleys are so staggered in a way to make the belt free at the narrow diameter of the pulley.

It is clear that power is transmitted to the belt by the driving pulley near one edge and that power is taken out by the driven pulley from near the other edge of the belt, an interesting way of transmitting power and one which the belt objects to as indicated by the way the fasteners or laces more rapidly tear out at each edge of the belt than at the centre.

Another thing which is quite clear from our picture, which is well known in practice, is that one cannot indefinitely widen a belt on a cone pulley, because the wider the belt the more fierce the battle of forces, the lower the efficiency of drive, and the shorter the life of the belt.

Individual driving of paper machines has shown how inefficient the transmission of power by cone pulleys can be.

I suppose no one will disagree that, other things being equal, the machine that has the most perfect speed control as a whole, and particularly the most perfect Inter-Speed control will produce the best paper. A paper-mill owner in Scotland a few years ago told me, that, by taking out the engine which previously drove the variable speed end of his paper machine, and replacing same by an electric motor, he was able to produce, on the same machine, paper to a 15% keener whole machine. Today it is possible for the paper maker to have perfect speed harmony as well in beduce, on the same machine, paper to a 15% keener specification than ever he was able to do before. He had all the belts as before, but a motor in the place of the engine; the governing was better, that's all, for the whole machine. Today it is impossible for the paper tween sections where it counts most in the product produced and in the cost of production.

For the first time in the history of paper making, the paper machine may now be a positive instrument in the hands of the operator. Such a machine has been in operation since the early days of the war with Inter-lock control, some six years of continuous operation. The machine may almost be described as a jobbing machine; its usual service is to run a few hours on one class of paper and then to change over to another class of paper and speed. The speed variation for running conditions is on that machine, 10 to 1. The machine was one of the type mentioned early in the paper with a sectional drive, which had given so much trouble that the management were on the point of throwing it out. The motors were in many ways unsuitable for Inter-lock control. But, in spite of that the machine with Inter-lock control is running today and has been producing paper throughout the war.

Your Council have asked me to describe to you the Inter-lock particularly as installed in connection with new Laurentide machines, and I wish to thank the management thereof for their permission to do so.

In a short paper it is impossible to cover the whole subject of sectional motor driving of paper machines. I will need be content with covering some of the major considerations of the Inter-lock, but I most earnestly ask any members present at the close of the paper to put forward questions, and I will do my best to answer them.

Each section has its own motor. The drive may be through any form of gearing, or the motor may be direct—coupled to the section. In the case of slow speed machines there is no doubt that some form of gear box is the best, be it worm or of the herringbone type. For high speed machines, to direct-couple is probably the best on account of space considerations; on account of efficiency there is nothing to choose. The slow speed motor has an efficiency about the same as the combined efficiency of the higher speed motor and the gear box if of the herringbone type; a combination of both systems is used at Grand 'Mere.

The motors and interlocking regulators are of the totally enclosed type with forced ventilation and all motors and regulators being in the machine room, this arrangement protects the plant against hose displays at the wet end! and against the high temperature air conditions around the dryers, and as filtered air is used, the motors are kept clean. A nice arrangement sometimes possible in the case of a new mill is to build an annex for all the electrical equipment, to keep this clean and dry, and to allow the driving in shafts to pass through a wall of the annex to the machine room. (Lantern slide).

The motors at Laurentide are shunt or compound wound direct current motors, fed from common busses with separately excited fields, also dealt with collectively. The source of common supply may be the usual direct current supply in the case of a mill having this source of power; a separate D. C. Generator may be installed; or, again, a motor-generator set may be used where A.C. supply is produced only by the prime movers.

A separate motor-generator set or generator may be used for each paper machine, or a common supply for several machines with a special booster set for each machine. Where very small speed variation is required by all the machines in the mill, the whole of the motors may be supplied by common busses, and the entire speed variation be accomplished by shunt control of the motors collectively, the Inter-lock dealing with each motor specially and harmonizing common voltage supply and particular speed required.

A light master shaft (1½-in. diameter at Laurentide) runs the full length of the paper machine. This shaft may be located in any suitable place, above the floor, on the floor, under the floor, or in the floor. A visitor to the machine room at Grand' Mere will have difficulty in finding it at all. At every section of the machine a spur shaft is driven from this master shaft through a ball bearing bevel gear box, the small bevels running in an oil bath. Each motor through a cone or expanding pulley drives a second spur shaft supported in ball bearings, both spurs terminate in a differential gear box; the one spur is an index of the speed of the master section, the other is a correct and accurate speed index of the section motor speed in each case.

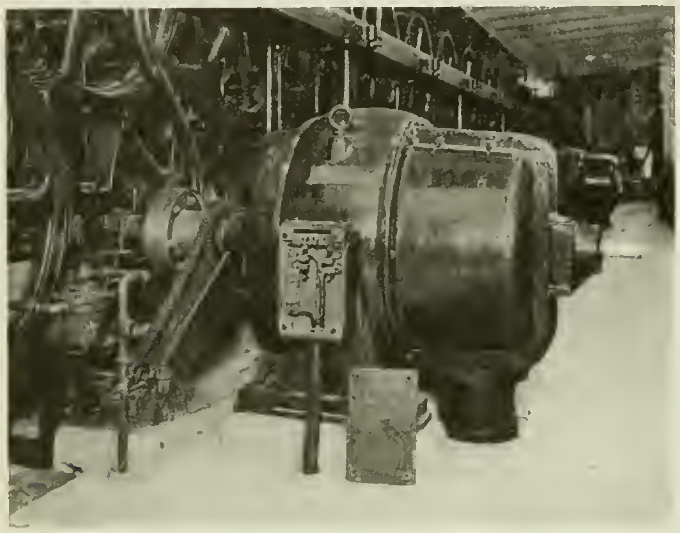

Fig. 3.
Typical sectional drive unit as installed on Laurentide's new machines.

At this point I would like to repeat once again. The only way to transmit power by a belt is by having a difference between T and t. If there is not any difference in the tensions no power can be transmitted. If there is a difference in the tensions between the two sides of the belt such as is met with in power transmission the ratio of stretch and slip will vary between full torque and no torque about three per cent. But, if "T" is the same as "t" the stretches are equal, and the slip is zero. Such is the case with the Inter-lock pilot belt. It is not called upon to transmit any power at all, except what is required to drive a 1½-in. shaft, a foot or so long, in two ball bearings and what torque there is remains for all practical purposes constant. The belt is able to deal with any torque met for this tiny duty a thousand fold, therefore:—(in the case of the Inter-lock) "T" is equal to "t"; stretch 1 is equal to stretch 2; slip is zero; and so the spur shaft driven by the motor is a true and perfect index of the motor speed at all times.

To return to description; (Fig. 4) the master shaft A runs the full length of the machine, and has at the side of each section, a bevel gear box B and a master spur shaft C inserted. Now, it will be clear that as all these master spur shafts are gear connected to the common master shaft, they will all run at exactly the same speed as the master shaft at all times, granted equal gears.

Each master spur terminates in a differential gear box, D such as is used on every motor car, another spur shaft E terminates in the other side of the differential gear box but in this case the spur is driven by section motor, F.

Every differential comprises three movements, one of which is the exact reflection of the difference in movement of the other two. In the case of a motor car the third member is a third shaft, the case being stationary; in the case of the Inter-lock, the third member which reflects any difference in speed between the two spur shafts is the differential case itself. The case is supported by the two shafts, C and E, and is free to move and indicate any angular variation of the two shafts.

Now so long as the motor makes the same number of revolutions per unit of time as the master shaft, the motor driven spur will make the same number of revolutions as the master spur (granted the draw control belt is set for equal diameters of cone pulleys H) and if the motor makes the same angular speed in degrees per unit of time as the master shaft, then the motor driven spur will make the same number of degrees movement as the master spur and there is no tendency for the differential case to move at all. So long as the two spurs move at the same angular speed, the case of the differential cannot be moved, except by such force as will strip the teeth of the differential gear. We see therefore that the case is a complete and accurate reflection of the difference in speed between the master and motor spurs, no matter if this difference in movement can be measured in revolutions or only in degrees regardless of time; so, if in any period of time the motor spur has moved out of synchronism one degree, the case of the differential gears, and one revolution of the differential

Shunt regulators G are used in conjunction with the differentials, and the combination of these elements holds in relative synchronism the speed of each motor in relationship with the master shaft. The effect of a shunt regulator is so well known that there is no need to describe effects of same here.

The arms of the shunt regulator G in circuit with each section motor is mounted on the case of the differential gear, D, and one revolution of the differential gear case will move the arm of the shunt regulator

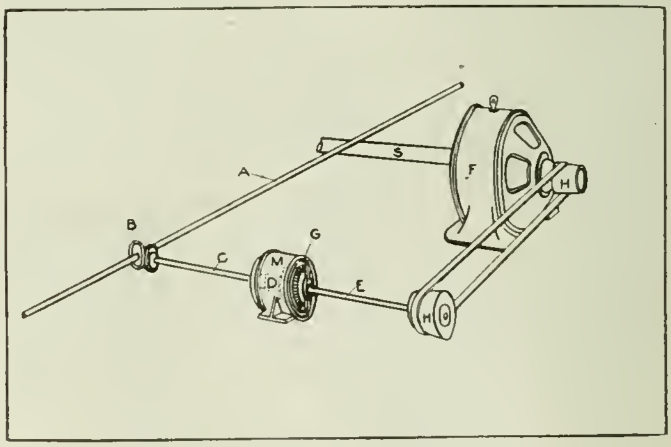

Fig. 4.—Diagrammatic arrangement of Inter-lock; showing master shaft A; spur gear B; master spur shaft C; motor spur shaft E; differential gear D, connecting C and E; gear housing M carrying contact circle of shunt regulator G (regulator arm is carried by differential case); sectional motor F; dryer driving shaft S; and cone (or expansion) pulleys H connected by belt L, which has only to turn shaft E in its ball bearings. It is the setting of this belt which controls changes in draw up to 20%.

one complete revolution, or in other words from minimum speed setting to maximum speed setting of the motor; this speed variation control may be as much as 100% of the normal motor speed, that is to say one revolution of the differential case and therefore one revolution of the shunt regulator arm will have swung the motor speed from slowest speed to double this speed.

This powerful force of speed control is used to synchronize the motors with the master shaft; in operation the differential case is almost stationary, therefore, as must be the case, the master and motor driven spurs make the same speed exactly, which is the desired result.

There would appear to be some difficulty in understanding the synchronizing feature of the Inter-lock and it seems to me that it would be helpful in understanding this feature today if I quoted what one man has written and then to answer it. In an article dealing with sectionalized drive some months ago, was written:

The following words referred to above are written under the nams of an engineer:—

"There are several types of sectionalized drives on the market......which have some form of speed governor which cannot act until a change in speed has actually taken place, in other words, something must happen before it can be corrected and there is a possibility of breaking the sheet before the governor functions."

Now let us look at this matter together, let us see if we can find the difficulty that this engineer has. Let us see if we can show that he is worried without a cause.

We have seen that a single belt drive on a section may, with a change of load as little as 20% cause a change of draw of 100% to 200%; sometimes the paper breaks, sometimes it does not. Now let us see how the Inter-lock behaves. The motors are controlled in speed by shunt regulators operated by the sensitive differential gear which reflects on the regulator any *tendency* to get out of step, by any motor, not in revolutions, hardly in degrees, 360 of which go to make one revolution; the two shafts terminating in the differential gear box, one geared to the master shaft and the other as good as geared to the motor, will make the same number of revolutions per second, per minute or per day. The one is a correct reflection of the revolutions made by the master shaft, the other of the motor to be controlled. If the master spur has ticked off on a cyclometer dial during a continuous run of the paper machine one million revolutions, the corresponding motor spur shaft will also have ticked off one million revolutions plus or minus one depending which is phasially in advance; that is if the cyclometer dials are accurate!! How can it be otherwise, for if the differential gear case moved one revolution the motor would in such period of time have doubled its speed, and for every revolution of the differential case the motor would have varied in speed 100%, the motor swinging between a normal speed and double speed per revolution of the case. Certainly no paper could be produced under such wild conditions. No, that shunt regulator is securely locked in space, also the differential case, and so, the master and motor spurs run at the same speed exactly; they are synchronized, and so the motors also are compelled to run in synchronism with the master shaft and so with each other. Let us see why. The contacts on the shunt regulator are relatively few in number. If there were a million speed contacts it would not be possible on any one contact to obtain such speed synchronism as mentioned, such equilibrium as would give the cyclometer dial readings as mentioned above between the two spur shafts, and so the regulator arm quietly "breathes" a few degrees in between two neighboring contacts.

No contact on a shunt regulator could give 100% speed perfection and so the regulator gives this in effect by using electrically a selection of two contacts to get exact speed synchronism.

Suppose the master shaft to be running at 500 revolutions exactly, and that it be desired to run the motor at 500 revolutions as well, suppose that the setting on the cone pulleys was 50/50 or midway position, then the spur shaft would run at 500 revolutions as long as the motor driving it ran at this speed. The brush on the shunt regulator lies electrically on a contact at an instant which would give, say, a speed on the motor of 525 revolutions; this is too high a speed, and so the brush actuated by the movable case of the differential moves a few thousandths of an inch away from this contact. The new position says in effect to the motor, you shall run at 475 revolutions. This immediately starts the brush on its return travel a few thousandths. It is then told to run at 525 revolutions again and so it returns a few thousandths of an inch to the 475 revolutions stop. In practice it is very difficult to see this operation with the naked eye, the movement is so small, but electrically that is the effect, the motor actually running at the desired 500 revolutions all the time.

It is not a case of the motor running for a few seconds at 475 revolutions and then a few at 525 revolutions; that is clear, for if such was the fact the case would be running at the difference in speed in one direction or another, but we have seen that the differential case is for all practical purposes stationary; the electrical effect is to give an average field on the motor which exactly corresponds to the 500 revolutions desired without any speed fluctuation at all.

Now let us examine a change of load conditions. Let us take say 20% load increase the same as taken with the belt. We have seen that such a load variation could make a speed change of 1% or a draw change of 100 to 200%.

A normal variable speed motor uncontrolled under similar conditions might vary in speed anything from 1 to 6% depending on the portion of the paper machine range of speed it was operating under, or in other words might be six times as sensitive as a belt under normal average behavior.

Let us assume 5% change in speed tendency and trace the operation out through the Inter-lock control.

We have seen the motor shunt regulator slowly moving between two contacts and giving a speed of 500 revolutions per minute; now the motor tries to run at 5% less speed, or in other words at a speed of 475 revolutions.

Under the old condition we had two contacts on the shunt regulator which at that load gave speeds of 475 and 525 revolutions, respectively. Under the new condition of load these two contacts would become respectively 450 and 500 revolution contacts, so theoretically we have a condition where the brush arm would, with the change of load, remain quietly on the higher speed contact.

In practice such a state of equilibrium never exists but the brush arm would lie a tiny fraction of its time electrically in connection with the old 475 revolution contact, which is now a 450 revolution contact, and the majority of its time electrically in connection with the new 500 revolution contact, or it would decide to move between the next higher contact and the 500 revolution contact and there remain until the condition varied again.

The effect on the motor is like that on a synchronous motor, in regard to its fellows; it has moved a few degrees out of phase and then rested so much out of phase with its fellows, but the periodicity of turning is exactly the same as before. These direct current motors are made to behave together exactly as synchronous motors with any one setting of draw, but any draw can be obtained by moving the belt on the motor speed index pulley (H in the diagram).

Now let us examine how change of draw is achieved. We desire the motor as indicated first to run at 501 revolutions instead of 500, the belt is shifted on the motor and motor spur cones in a way that would tend to make the motor spur run 1 revolution per minute slower, the regulator arm would according to the law of the differential try to run at one-half a revolution per minute slower than previously, but this would bring the arm first of all electrically in connection with the 525 revolution contact which is too fast, and so in effect what happens is that no change is observed by the eye on the differential arm but actually it pauses a little longer electrically on the 525 revolution contact and a little shorter on the 475 revolution contact and the speed of the motor driven spur is still the same, but the speed of the motor shaft is 1% faster than before, i.e., the motor is now running at 501 revolutions, whereas before it was running at 500 revolutions. The naked eye cannot see any change of position of the regulator brush at all, but a speed counter will show the motor running one-fifth of one per cent faster than before; the motor will continue to run at exactly 501 revolutions for all time so long as the belt setting remains the same and the master shaft runs at 500 revolutions.

If the master shaft is varied in speed 10%, which is accomplished by deliberately changing the speed of motor which drives this shaft, every motor will vary its own speed 10%, and the proportional speed relationship of all the motors to each other will remain just as before, *exactly as before*, and the draws will remain constant in percentage although the speed of the paper machine as a whole has been changed 10%.

On the No. 8 Laurentide machine, with paper web for the first time passing over the fourth press only at about 600 feet per minute, the word went to the control room—"1,000 feet', the speed rapidly rose, draws remained untouched, and the catenary of the paper between presses indicated no change of sag or tightness, things went on merrily until the strainers overflowed from some cause unknown to me—I am not a paper maker—and the stock gave out at a speed of about 950 feet per minute; then of course the experiment stopped!

I think we have dealt with our engineer friend's difficulty (of snapping the web due to functioning of the governor) but if any point has not been made clear, I shall be glad to answer questions.

It may be said that such a degree of perfection is not necessary. We have seen how crude the mechanical drive of a paper machine is when analysed, but what does such perfection of speed control mean to you? It means dollars and cents. It means less stoppage, less "broke," the possibility of producing paper to a keener specification, the possibility of producing paper at a higher speed; paper to the same specification from cheaper materials; more uniformly tough paper;—a more uniform quality of the product in every respect.

Let me suggest to those of you who carefully analyse conditions that you try different draws per section along with microscopic and other analysis of stock. You know now that the draws will be constant, and see which draw produces the test results.

On old machines you will be able to creep up in speed inch by inch, limited only by the mechanical condition of the paper machine itself.

One day, a dear old man said to me: "Yes, I would like an Inter-lock between the dryers of my machine and the calendars, that is where most of my broke is made." But as in the human body, the trouble does not always express itself at the original place of error. The origin of his trouble might easily have been between the couch and the first press where undue strain crept in unobserved and only showed up at the calendar.

Gentlemen, I am at your service to answer any questions dealing with the matter just read that are within my power to answer.

W. A. ANDERSON, Chairman, Eastern Canadian Division Pulp and Paper Superintendents' Association.

Beating—Today and Tomorrow*

By W. B. CAMPBELL, Process Engineers, Montreal.

Before attempting to say anything about the beater of today, a brief reference must be made to the beating practise of yesterday. The reference is necessarily brief not only on account of the limitations of time for this present paper but also because a much more interesting account of early beaters has recently appeared. I refer to the illustrated article by Mr. Dard Hunter in the Paper Trade Journal of November 4th, 1920.

When rags were first used for paper making, in about the year 1100 A.D., they were first partially disintegrated by a rotting process and then beaten to a pulp by hand, using a mortar and a pestle or by pounding the cloth with heavy paddles while it lay on a stone.

This primitive method was improved upon by applying mechanical power to the mortar and pestle, thus making it in principle the same as the modern stamp mill. The old stamping mills consisted of rows of heavy wooden hammers which were caused, by means of a series of cams on a stout axis, to rise and fall into pans containing rags. These stamps were slowly developed from the first crude machines until mills had as many as six pans with three stampers to each pan. The stampers in each machine were divided into three classes: The first set were shod with heavy, rough, iron teeth which would mangle the cloth. When sufficiently treated in this pan the rags were bailed out and put into the next pan where the stamps were less heavily shod. The final treatment was given by stamps of plain wood. The whole process of beating took about thirty-two hours, and a mill with six pans could produce about five hundred pounds of paper a week.

Paper mills using the stampers were general in Germany and operated by water power. They were also used during the first century of paper-making in America. In Holland, however, there was no water power and the inventive Dutchmen were forced to devise something which could be operated by the wind and they evolved the "Hollander" some time about 1670. It consisted, as it does at the present day, of a roll with knives turning in an oblong tub rounded at both ends and fitted with a backfall and midfeather.

It is rather humbling to look at the old prints such as are shown in Mr. Hunter's article and consider how little we have progressed in the last two hundred years. Mechanical improvements there have been, of course. We have substituted metal for the original wooden roll; we no longer drive by wind power transmitted through wooden cog wheels; our machines are larger and much better constructed. But in principle, we have made no great progress, certainly none equivalent to the big step taken in 1670 when the Hollander was substituted for the stamp mill.

Attempts to improve beaters have not been lacking and a complete account of the various inventions would require a large book. As many of these modifications contained ideas of value it is reasonable to inquire why they failed, for if survival be the test they must be considered failures. With the exception of the Jordan, they have all gone to the scrap heap and would be quite forgotten if they did not appear before us embalmed on the pages of all the older text books on paper-making. Such things do not happen by chance, and it must be that the ordinary beater, crude as it is, has some valuable features that outweigh the advantages contained in the modifications. If permanent improvement is to be effected these inherent good qualities of the old Hollander must be kept in mind.

The outstanding feature of the ordinary beater that has kept it in use all these years is the fatal facility with which it can be used to secure any result desired. Whether this stock is wanted long or short, slow or free the beater can produce it. Inefficiently it is true, but if properly handled it does produce the desired product. This is unquestioned. That the beater is inefficient is almost equally unquestioned.

Before discussing further the design of beaters it is well to consider the functions which it performs. In most mills it is made to act first as a shredder; heavy laps of pulp, frequently frozen, are fed to it and it is expected to chew them up with ease. It is expected to tease out and separate the individual fibers whether these be originally in rags, in woody bundles or simply felted together as in the lap pulp. It must brush these fibres so as to fray the ends—at least in the case of cotton. It must cut the long fibres to a suitable length. It must, by its action, cause the fibers to become hydrated and form more or less of what some authorities term "mucilage." It must act as a mixer for the incorporation of loading, colors and size. In many cases, it is expected also to act as a washing machine for the removal of undesired impurities. And late in years, it has been expected to do most of these things under the supervision of unskilled labor.

Many of these duties are not really duties of the beater, yet as they are loaded on it they must be considered. It is unfair, for instance, to expect the beater to be an efficient shredder and as this is becoming realized, it is more common to find lap stock passed through a shredder before going to the beater. There is little to be said against the use of the beater as a mixer as this does not interfere with its real beating action. It does seem questionable whether it is good practice to go on beating after the size has been precipitated on the fiber. Using a beater as a washer does not interfere with the beating action but surely some more efficient washing methods could be devised—probably along the lines of a Decker. Of the duties to be performed by the beater we have left only those of cutting the fibers, separating them from each other and bringing about those peculiar physical and chemical changes included under the term of hydration or making the stock greasy.

In the earlier days of papermaking, the raw materials were chiefly rags, either cotton or linen, together with some jute—all long fibred material. Under these conditions it was imperative that these fibers be shortened for the production of fine paper, and the equipment of the Hollander with steel bars was the natural thing to do. In early days beaters were small and rolls were light—they could be let down so that nearly all their weight was on the bedplate and the cutting action was not out of proportion to the rubbing action to produce a good pulp. But as beaters were made larger and the rolls heavier it was found that even with rag stocks it was necessary to keep the roll up longer so as to give time for the hydration without unduly shortening the fiber. To put it another way, the beater bars had too much edge in proportion to surface when heavy rolls were used. Had it not been for the adaptability of the Hollander, this would have been sufficiently marked to call for a change in design but as simply keeping the roll up allowed the production of properly prepared stuff, no alterations appeared necessary.

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*Read at the annual meeting of the Technical Section of the Canadian Pulp and Paper Association, Montreal, January 19th, 1921.

Then wood pulps came along. Having naturally short fibers, cutting was rarely necessary so that the functions of the beater were reduced to separating the fibers from each other and producing whatever hydration was necessary. Beater bars were made wider and blunter. The weight of the roll was seldom allowed to come fully on the bedplate. Kollergangs were frequently used as they provided a pure rubbing action although giving but small production for the power expended. The logical alteration of the beater roll brought into use the lava stone rolls—thus giving greatly enlarged rubbing surface and suppressing the cutting action. To those who had come to believe that time was the important factor in producing hydration and the increased strength that goes with it, the results were amazing. Beating time was, in some cases, reduced to one-eighth. Indeed the stone beater roll is claimed by some to make the stock too greasy simply because they cannot bring themselves to stop beating after the short time really necessary to finish the work.

Aside from considerations of beating surface there must be taken into account the movement of the stock to and from the point where the beating action takes place. In both the original Hollander and type of beater seen in ninety-nine out of every hundred American mills today, the stock must move in a trough having almost rectangular cross section and the very sharpest bends. Not an engineer in the country would consider forcing a stream of air or water around such a sharp bend as is provided for the movement of the thick viscous mass of stock and water in the usual beater. When the stock does complete its slow and stately progress to the roll, it is snatched up and, at the expenditure of much good energy, it is given a very brisk velocity indeed. But it loses this velocity and energy almost immediately as it is banged against the hood and so drops down to resume its unexciting travel around the tub under the impelling force of nothing more than the hydraulic head provided by the height of the backfall. These defects were in part remedied by European engineers by widening the midfeather, raising the backfall, giving the tub a bottom with a slope all the way from the backfall to the front of the roll and making the trough more nearly semi-circular in section. Such a design is found in the Marx beater introduced here about ten years ago and in the recent Niagara beater. The change made it possible to circulate stock of seven or eight per cent consistancy at speeds of about twenty-five feet per minute as against four or five per cent at ten or fifteen feet per minute. A still later advance in the same direction is the Rabus beater, the first American installation of which is just now going into operation. In this the stock is carried right back over the top of the roll, thus conserving nearly all of the momentum of the stock and doubling the static head which gives circulation. The trough is nearly circular in plan, giving little resistance to flow. Such beaters are operating with consistencies of ten to fifteen per cent and circulation speeds of forty-five to sixty feet per minute.

Such has been the development of the beater itself; there has been another line of advance in beater practice,—the increasing use of the Jordan. As originally intended, the function of the Jordan was simply to give a final shaking out to the stock, which at the comparatively high consistency of the beater, had a tendency to bunch together in clots. But of late the Jordan has been made to encroach on the work of the beater. By widening the bars or by giving it a lava stone filling and backing up the stock at an increased consistency, the Jordan can be made to do nearly all the work of the beater. In such instances two or more Jordans are placed in series. For some classes of work, at least, the system has many advantages and it is to be expected that it will increase in favor. It may even be that the Jordan will be so developed as to replace the beater entirely, but this is doubtful. It is more likely that the beater and the Jordan will develop side by side, each doing the work for which it is best fitted.

The directions which the development will take are, of course, entirely a matter of surmise and personal opinion. Where real beating is wanted, and by that is meant the production of more or less hydrated stock either for increased strength or for parchmentising qualities, it seems logical to expect that the rubbing surface will be greatly increased, either by the use of lava stone or by some similar material. The same holds for those cases where a refining action is wanted, such as with knots or screenings. Here it is necessary to rub apart the fiber bundles with as little damage as possible to the fibers themselves. To do this it is not necessary actually to rub the fibers between two more or less rough surfaces—the same effect can be secured by bringing the stock at high velocity against a rough surface. This might be done by lining the entire hood with lava stone, for instance, in beaters where the stock is brought up over the roll. That this will effectually break up fiber bundles is shown by the Stobie disintegrator which depends entirely on this action for results. Although wasteful of power in many respects, it is reported that this apparatus is about as efficient as the ordinary beater.

This change might even be carried farther and the hood, at a distance of only a foot or so, be brought down in front of the roll so as to return the stock immediately to the working space between the roll and the plate. A very few turns of the stock in such an arrangement would give quite sufficient beating action and it would be necessary to make the beater continuous by feeding fresh stock at one side of the roll and withdrawing it at the other. Control could be effected by adjusting the flow of stock to and from the beater. Such an arrangement would utilize to the full the velocity imparted by the roll and would, in effect, be a continuous beater having a circulation speed approaching the circumferential speed of the roll. It would provide all the flexibility of the beater which has kept it in use these many years, yet it would be an efficient machine. It will be noticed that this is a hydrid of the Rabus beater and the Jordan refiner. Evolution usually proceeds by crossing varieties so as to combine the advantages of each.

Before leaving the subject, something should be said of the recent researches on the subject of beating and the lines along which future research may well be pursued. Miss Miner, in recent papers, has thrown a great deal of light on the intricate physicochemical reactions which go to create the parchmentising effect and, when not carried to an extreme, the increase is strength. It is rather dangerous to attempt to describe her work in a few words but it may be summariezd about as follows:—

The parchmentising effect is due to the production of gelatinous cellulose which, for want of a better term, is called "mucilage." This mucilage is a complex of cellulose, hydrocellulose and water in one of those peculiar combinations, half chemical and half physical which are so frequently encountered in colloids. If the original stock contains hydrocellulose, the mucilage is developed very quickly by the mechanical action of the beating. If it does not contain hydrocellulose, then the mechanical action first causes the water to dissolve in the cellulose forming a cellulose hydrate and then a part of this breaks down to hydrocellulose and a jelly is formed. Further action of the water causes further breaking down and the formation of soluble compounds. If the cellulose is such that it can form hydrocellulose only very slowly under these conditions then the second breaking down may be at such a rate as to destroy the "mucilage" as fast as it is formed and it will be impossible to secure a parchmentising effect. If, on the other hand, hydrocellulose is formed by preliminary action of acid or in some other way, then the production of "mucilage" is extremely rapid. It is to be hoped that this work will continue as it is of great value in providing a basis for intelligent work on beating.

Kress and MacNaughton in a paper published in 1917 described some interesting experiments which they made at the Forest Products Laboratory at Madison. Unfortunately, their report leaves out data as to power and circulation which seem necessary to show its full value. Without this data their conclusions may be reduced to the fact that a 2 per cent stock was acted upon with greater rapidity than was stock of greater consistency and that the sedimentation test, while it does indicate the slowness on the machine, is no way an indication of the character of the beating. Taking their experiments in conjunction with some unpublished—and unfinished—work at the Forest Products Laboratories of Canada, some interesting conclusions may be reached. Although they rest on rather unstable foundations they may be briefly stated here in hope of future confirmation. They are as follows: The production of a beater, other things being equal, is in proportion to the weight of fiber which passes the roll per minute; and that in any one beater the amount of fiber which passes the roll per minute per horse power, or in other words, the production per horse power, is constant over a considerable range of consistencies. A few weeks work with beaters such as those at the Forest Products Laboratories, together with a hand sheet apparatus as described on the next page by Wilen, should be sufficient to confirm or modify these points, which, if proved, would be a considerable step toward the handling of beating on a scientific basis.

SALESMEN SHOULD KNOW PAPER QUALITY.

Mr. F. C. Clark, Director of the Department of Technical Control of the American Writing Paper Company, recently addressed the salesmen of A. Storrs & Bement Company, of Boston, on the subject of paper testing methods.

He said in part: "It is a well recognized fact that an accurate knowledge of the materials and chemicals entering into the composition of a paper is of great value to every paper-maker, paper-buyer, or salesman. At the present time there is developing, both within and without the paper trade, a growing interest in the subject of paper testing. There is a demand on the part of the buyer for better methods to enable him to determine the quality of a paper for his particular need, and how is the salesman to answer the questions of the buyer if he does not know something about the quality of the paper he is trying to sell and what tests it will be subjected to before it is accepted? That there is this growing interest in the subject and a general demand for standard methods of testing, is most conclusively shown by the work which is being accomplished in the commercial paper testing laboratories that are starting up in various parts of the country.

"This increasing general interest in paper testing has been a stimulant to the manufacturer to produce a paper that will more than meet the specifications required, and it gives the salesman real facts to talk about. How few of the salesmen of the pas knew the quality of the paper they were trying to sell, and how it compared in strength and furnish with a competitor's paper! There is no reason to-day for the salesman's not knowing every fact about the paper handled by his company."

Mr. Clark then explained in detail the methods used in testing paper, dividing them into three classes—microscopical, physical and chemical. He also showed the value and relation of these tests in determining the quality of a paper.

A. W. P. Co. Sends Stock Card Index.

Something new in paper merchandising has just been forwarded all agents for the American Writing Paper Company Eagle-A Mill Brand lines in the form of a mahogany finished Desk File for the semi-monthly Stock Record Cards that the Company has customarily issued on all of its mill brand lines.

This container provides places for pens, pencils, and filing space for the stock record cards.

These cards show all standard Eagle-A lines as they are stocked at the mill giving exact quantities of all items available, together with suggested resale prices. This list includes Bonds, Books, Blue Prints, Envelope Stock, Covers, Index Bristols, Ledgers, Weddings and Papeteries, Writings and Typewriter Papers.

If Safety was given the same consideration as other business you would see a great change in this old world.

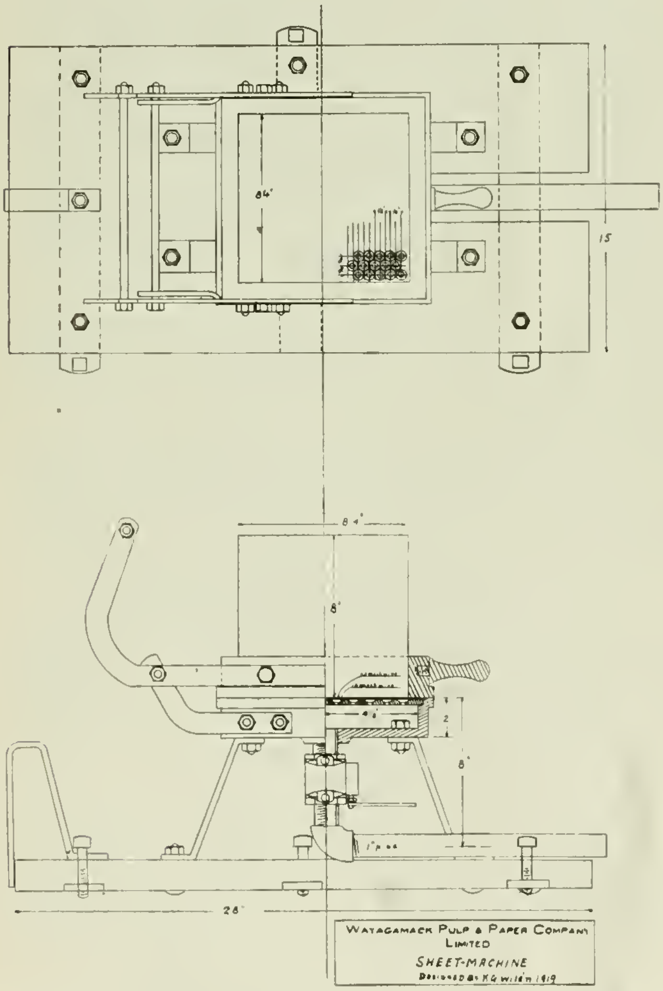
Testing Sulphate Pulp for Strength*

K. G. WILEN.

Chief Chemist, Wayagamack Pulp and Paper Co., Ltd., Three Rivers, Que.

The necessity of testing pulps in general, and kraft pulps in particular, for strength, is too obvious to need any further elaboration.

The old way of testing pulp for strength by simply tearing a piece of pulp taken from a wet lap or from a dry sheet has only within the last few years been superseded by methods which really give results which may be taken as an indication of the strength of the pulp for papermaking purposes. The first published method which I have been able to find is described in an article by E. Sutermeister in "Paper" of November 10th, 1915. The method employed by Sutermeister consisted of the making of handmade sheets of pulp which had been beaten in a ball mill, and testing these sheets for bursting strength with an Ashcroft or a Mullen tester. Various modifications of Sutermeister's method have been published from time to time but in most cases the strength of sulfite pulp only has been dealt with. A few years ago an investigation of the properties of sulphate pulp produced under different cooking conditions was started in the laboratory of the Wayagamack Pulp and Paper Co., Ltd., and then it became necessary to have a method for testing sulphate pulp for strength. After trying out the methods used or recommended for testing of sulphite pulp the following method was found to give satisfactory results with sulphate pulp.



The method of testing sulphite pulp for strength published by the Committee on Sulphite pulp of the T.A.P.P.I. in "Paper" November 8th, 1916, was tried out on kraft pulp but proved to be unsuitable in several respects. The proportions of pulp, water and pebbles in a jar of given size, as published by the above Committee, did not give the most satisfactory results as regards beating, and according to our experience the hand mould leaves much to be desired with regard to the uniformity of the hand made sheets. There did not seem to be any obvious reasons for testing the sheets with the Ashcroft tester, as long as the Mullen tester is universally used for commercial purposes. It appeared to us more desirable to express the results of the strength test on a basis which would give a direct comparison with results obtained in actual practice on the paper machines, particularly as the method finally adopted could then be used for placing the blame for any paper not showing the proper test on the pulp mill or the paper mill.

The method of testing pulp for strength which has been followed in the laboratory of the Wayagamack Pulp and Paper Co., Ltd., for the last three years is briefly as follows:

25 grs. of air-dry pulp are thoroughly broken up by forcing the pulp through a screen with 1-16-in. round holes by means of a jet of water. The screened pulp is then collected on the sheet-machine described below, and placed in a tared weighing cylinder. The contents of the cylinder are then made up to 3 kgs. with water and transferred to the ball mill jar. The volume of the jar is 4.50 litres and it contains 2,500 grs. of pebbles of such a size that there are 250 pebbles in each jar. The pulp is beaten for one hour in the ball mill at a speed of 66 r.p.m. The beaten pulp is then washed out of the jar and made up to 10 litres in a vat from which three measures of 450 ccs. each are placed in a pail and made up to approximately 5 litres with water. After thorough stirring the contents of the pail are poured on to the sheet-machine.

The sheet-machine consists of a rectangular box, the upper surface of which is made of a perforated brass plate. A 14 mesh backing wire and a 60 mesh machine wire are soldered to the plate. When a sheet is made the "deckle box" is placed on the wire. A quick opening gate valve is used for draining the water from the machine. (See diagram).

The "coucher" consists of a square block of wood about 10-in. x 12-in. The under side of it is curved on a 30-in. radius. The thickness in the centre is about 1¼-in. and at the edges ½-in.

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* Paper read at the annual meeting of the Technical Section of the Canadian Pulp and Paper Association, Montreal, January 19 and 20, 1921.

As soon as the pulp is transferred to the machine the drain valve is opened and the water allowed to drain off until the suction on the sheet is released by air entering the drain pipe. The "deckle box" is lifted off the machine and the coucher is covered with a wet felt and the front edge of it placed on the wire. The coucher is then pressed down rapidly until the back of it comes in contact with the wire. The sheet will then be firmly held by the felt. The felt is next removed from the coucher and placed on a board which fits into a letter press. In this manner 5 sheets are made and placed on the board. The top sheet is covered with a felt and the board is placed under the press. The sheets are pressed for about 15 seconds under all the pressure that can be put on the press by hand. The sheets are then transferred on to wire trays and placed in a drying oven and dried at 180 deg. F. When thoroughly dry the sheets are taken out and allowed to reabsorb the hygroscopic moisture for 1 hour. They are then cut to 6-in. x 6-in. and weighed to the nearest .05 of a gram. The weight of the sheets is calculated to lbs. per ream of 480 sheets 24-in. x 36-in. *i.e.* the commercial weight-standard for kraft. The sheets are tested on the Mullen tester in the four corners and in the centre. The average Mullen test multiplied by 100 and divided by the ream weight of the sheets is the expression for the strength of the pulp, in other words the strength is expressed as per cent of "point per pound."

Generally speaking, the results obtained by this method of testing pulp for strength can be taken as a very fair indication of the strength to be expected from the pulp on the paper machine as long as the degree of hydration imparted to the pulp in the beaters is not materially different from the hydration produced in the ball mill. It is usually only in the case of extra soft kraft bag paper that the relation between the strength of the hand made sheets and the paper made on the machines varies from a definite figure.

In arriving at the above method of testing pulp for strength a number of experiments were made in order to ascertain the influence of the different factors involved, on the final result.

Some of the factors studied were:

(1) Dryness and methods of drying pulp samples before testing.

(2) Concentration of pulp in ball mill.

(3) Weight of test sheet made.

(4) Weight of pebbles.

(5) Duration of beating.

(6) Method of drying test sheets.

(7) Effect of smoothing wet sheets by pressing between sheets of heavy paper.

(8) Influence of pressure applied in couching sheets.

(9) Influence of pressure applied on wet sheets after couching.

The influence of the factors will be discussed in the same order as they are enumerated above.

DRYNESS OF SAMPLES BEFORE TESTING.—A sample of pulp was taken from the vat of a wet machine when a lap was being made. The lap was then treated as follows: one part of the lap pulp was allowed to dry in the air and another part was dried in the drying oven at 210 deg. F. The four samples of the same pulp were then tested for strength with the following results.

Sample from vat..	1	hour beating	142%
Wet sample from lap.. ..	1	“ “	141%
Air dried sample from lap	1	“ “	120%
Air dried sample from lap	1½	“ “	134%
Air dried sample from lap	2	“ “	137%
Oven dried sample from lap	1	“ “	108%
Oven dried sample from lap	1½	“ “	118%
Oven dried sample from lap	2	“ “	126%
Oven dried sample from lap	2½	“ “	125%

These tests have been confirmed a number of times and show clearly that the method of drying which pulp undergoes before it is tested for strength is of very great importance, in fact, some of the differences in strength obtained by quite radical changes in cooking conditions of kraft pulp proved to be much less than the differences caused by testing wet and dry samples of the same pulp. For convenience in breaking up the samples in the screen wet samples should always be tested whenever possible. The existence of a definite relation between the strength of the wet kraft pulp and the air-dry pulp has not yet been satisfactorily proved by us.

In testing a large number of dry kraft pulps it has invariably been found that these machine-dried pulps are weaker than the average run of wet pulp. While some of the dry pulps in their wet state, are undoubtly equal in strength to most kraft pulp manufactured, the drying of the pulp on the machines apparently makes dry pulps less desirable than wet pulp when maximum strength is required, both for kraft paper and test board.

Below are given a few tests of dry pulps:

1	121	
2	130	
3	113	beaten 1½ hrs.
4	124	
5	115	
Wayagamack kraft average (wet)	155	beaten 1 hr.

CONCENTRATION OF PULP IN BALL MILL.—The following amounts of pulp were placed in the ball mill jars with the same quantity of water beaten for the same length of time. The variation in strength is shown below:

Grs.	% Strength.
25..	143
50..	130
100	72
150	52
Unbeaten pulp..	54

While it is easily possible to keep the quantity of pulp taken constant within 2 or 3 grams in each case, a large variation from the standard weight apparently does not influence the result very seriously.

INFLUENCE OF WEIGHT OF PAPER MADE.—For this experiment a sample of pulp was taken from the flow box of a paper machine when making 41 lb. kraft bag paper, in order to have the weight of the paper made as the only variable.

Weight of paper.	Mullen test.	% Strength.
31 lbs.	42	135
65 lbs.	95	146
114 lbs.	150	132

The strength of the paper made on the paper machine at the time the pulp was taken for the above experiment was 100% of "point per pound." From the above figures it is seen that variations of 100% in the weight of paper made do not influence the results by more than 10%. In actual practice, the weight of the paper made on the sheet-machine is allowed to vary from 55 lbs. to 65 lbs. per ream because repeated tests have shown that no variation in strength occurs with this variation of weight, with the machine used by us. It has been noted that if light weight sheets are made on the sheet-machine thin spots are likely to occur and a low average test results. If, on the other hand, heavy sheets are made they crease in couching and low results again result. From 50 to 60 lb. paper has been found to give the most satisfactory sheets as regards uniformity of formation, etc.

WEIGHT OF PEBBLES USED.—A variation of 100 grams in the weight of the pebbles used with all other factors constant, does not influence the strength of the resulting sheets noticeably.

DURATION OF BEATING.—The influence of the time of beating was found to be very marked until maximum strength is obtained but after maximum strength is reached further beating has comparatively little influence. It is of interest to note, however, that the "slowness" of the pulp increases uniformly with the time of beating, even after maximum strength has been reached. The slowness was determined with the Standard Schopper-Klem Sedimentation tester 0.5 gram of pulp in 200 ccs. of water were allowed to drain off for 15 secs.

Beating Time Hrs.	Mullen Test %	Sedimentation Test. ccs.
0	68	42
½	135	63
1	161	84
1½	168	103
2	166	120
2½	158	137

It should be noted that after beating for 1½ hrs. the pulp was too "slow" for the ordinary run of commercial kraft paper. The curves (p. 71) show graphically the influence of the time of beating on the strength and "slowness" of kraft pulp.

INFLUENCE OF METHOD OF DRYING THE TEST SHEETS.—Repeated tests made by air-drying 2 sheets and oven drying 3 sheets at 170 deg. F. from the same set of 5 sheets, have shown that oven drying at 170 deg. F. does not influence the strength of the sheets, provided they are left in the air for about 1 hr. after drying.

The following experiment was made in order to determine approximately at what drying temperature the sheets were made from pulp taken from a paper machine. The sheets were then treated as follows:

(1) 3 sheets were dried in a drying oven and the temperature was then raised to 240 deg. F. for 15 minutes. The sheets were immediately tested.

(2) 3 sheets were dried and heated to 240 deg. F. for 15 minutes and left in air showing a relative humidity of 60% at 80 deg. F. for 16 hrs. before testing.

(3) 3 sheets were dried at 214 deg. F. and tested after being exposed to air with 60 p.c. relative humidity at 80 deg. F.

(4) 3 sheets were dried at 180 deg. F. and tested after being exposed to air with 60% relative humidity for 1 hr.

(5) 3 sheets were allowed to dry in air with 70% relative humidity at 80 deg. F.

Sheets.	Strength %
1	100
2	126
3	150
4	150
5	152

It would thus appear that the sheets are not weakened by drying in the drying oven at temperatures below 200 deg. F. Drying in the oven at this temperature requires about 20 minutes, which means a considerable saving of time compared with the time required for air-drying, even when using a fan.

INFLUENCE OF SMOOTHING WET SHEETS BY PRESSING BETWEEN SHEETS OF HEAVY PAPER.—Attempts were made to improve the surface of the sheets by pressing them between sheets of heavy paper, but this procedure was found to increase the strength of the sheets very considerably, in some cases 25 to 30 points in 150. The smoothing had to be abandoned, however, on account of the irregularities in the increase of strength produced. To date no satisfactory explanation of these irregularities has been found.

INFLUENCE OF PRESSURE APPLIED IN COUCHING SHEETS.—In designing the sheet-machine the wire was purposely placed 1-16-in. below the edge of the box and the coucher made 2-in. wider than the box in order to minimise the effects, if any, of uneven couching pressure. With the machine as made, no difference has been found in strength of the sheets when they are couched off with the least pressure which will lift them off the wire and when they are taken off with all the weight a man can place on the coucher.

INFLUENCE OF PRESSURE APPLIED TO WET SHEETS BETWEEN FELTS.—The effect of the pressure to which the sheets are subjected between the wet felts was studied while varying the pressure from the lowest pressure which would remove enough water from the sheets to enable them to be handled, to the pressure exerted on them in a 500 ton bailing press. No variation in strength was noticed within the range of pressure obtainable with a letter press, but when the full pressure of the bailing press was exerted the strength increased about 12%. It is of interest to note in this connection that the sheets pressed with the baling press showed a parchmentizing effect and were nearly transparent.

Comparison of Pulps and Methods.

The principal difference between this method and other published methods is in the making in the sheets. It seems to be generally recognized by now that the hand mould is very unsatisfactory for making the sheets for several reasons. Firstly, the formation of the sheets depends very largely on the skill of the operator and secondly, when working with small quantities of pulp it is next to impossible to make sheets of uniform weight. Small circular sheets 5 or 6 inches in diameter are useless if the sheets are to be tested with the Mullen tester. The sheets being 7½-in. x 7½-in. as made on the above machine it is possible to cut 2 diagonal strips from each sheet for determination of breaking length and resistance to folding, as determined by Schopper's machines, and still have enough paper left to make six

Mullen tests on each sheet. The time required for making a set of 5 sheets is about 3 minutes and this is fast enough for all testing purposes.

In order to find what the difference in strength between different samples of kraft can amount to, samples from nearly all American mills and most Scandinavian mills have been tested, in addition to more than 3,000 samples of kraft of our own manufacture and over 100 different samples of pulp made in the cooking experiments.

The strength of commercial kraft pulps has been found to vary from 130% of point per lb. to 170% of point per lb. and the strength of the pulp made in the cooking experiments varied from 124% to 193%. The above figures all refer to samples which have been tested wet. The strength of the dried samples which have been tested varied from 90% to 140%, after beating for 1½ hrs. Under identical conditions of testing, sulphite pulps have been found to vary in strength from about 60% of point per lb. to about 110%. The number of samples of sulphite tested were, however, not sufficiently great to enable us to draw definite conclusions, but, apparently, the variations in strength of sulphite pulp are larger than in the case of sulphate pulp.

From a large number of comparisons of the strength of the pulp, as determined by the above method, and the strength of the paper made from it on the paper machines it has been found that as a general rule the paper machines do not develop more than about 75% of the strength of the pulp. A large number of tests have been made by taking pulp from the screens of the paper machines and making sheets by hand and comparing the strength of these sheets with the strength of the machine made paper. The hand made sheets have in every case been found to be from 20 to 50% stronger and are very often equal in strength to the hand made sheets made of the same pulp beaten in the ball mills. This is not only due to the better formation obtainable by making hand made sheets but also due to the fact that in making hand made sheets the whole of the pulp is retained on the wire but on the paper machine from 5 to 20% of the pulp passes through the wire and an examination of this pulp which passes through the wire shows it to be extremely hydrated and possess quite remarkable cementing properties.* It is therefore unreasonable to expect that machine made paper will ever be equal to hand made paper in strength. The strength of the hand made sheets, will, however, serve the purpose of showing if a low strength of paper is due to weak pulp or to faulty beating or to poor manipulation on the machine.

Conclusions.

As far as this method of testing pulp for strength has been investigated by us at the present time it appears to give a true indication of the strength of kraft pulps. A number of samples of sulphite pulps have also been tested by this method although the

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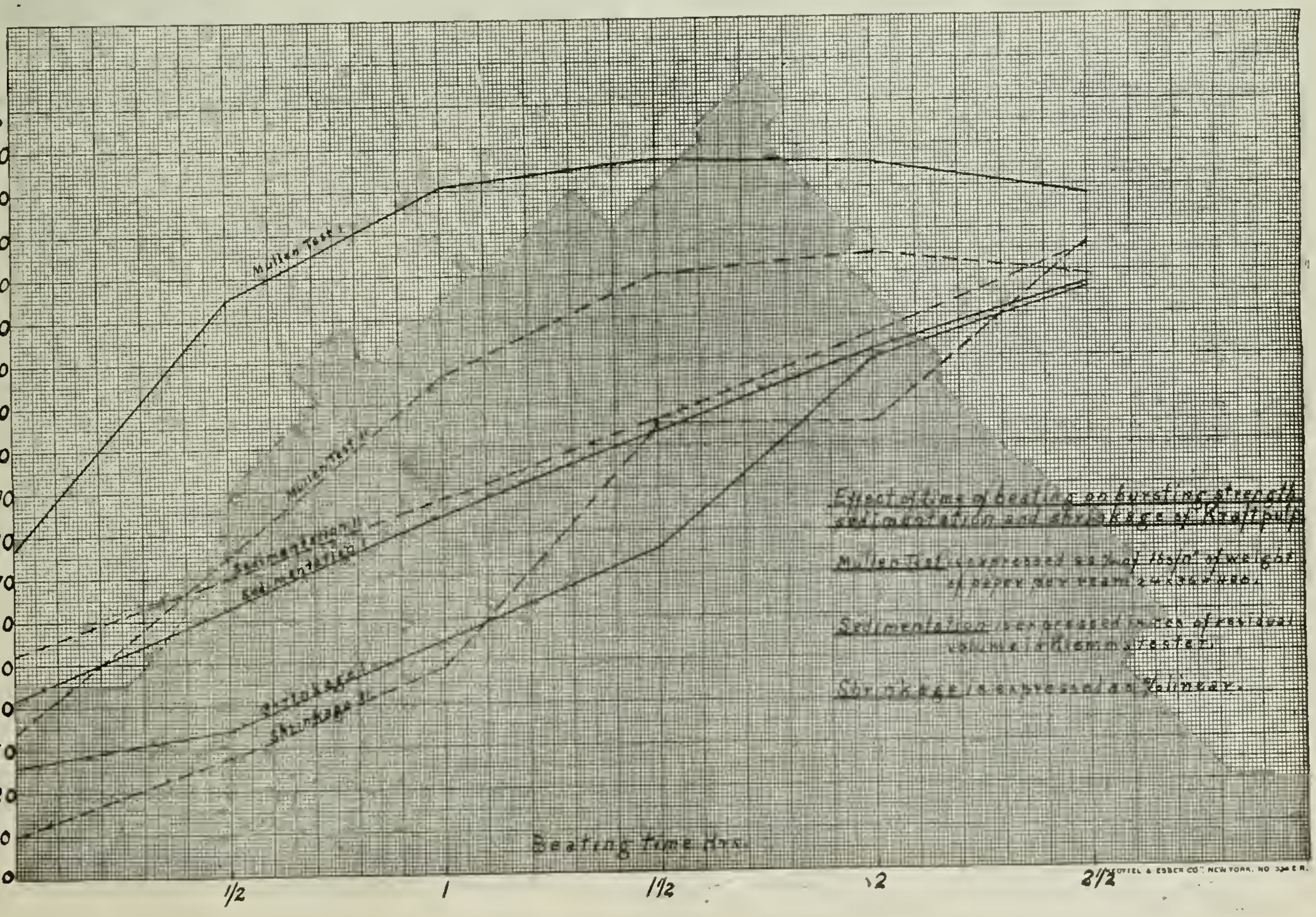
*Note:—The editor once devised a sheet machine which was intended to approximate more closely the conditions on this paper machine by applying the same suction as is used on the boxes.

It would be interesting to have a comparison of strength factors in hand made and cylinder machine papers.



time of beating has been shortened to ½ hr. for sulphite, as sulphite pulp hydrates much more easily than kraft pulp. In general it has been found that different grades of sulphite pulp show a much greater variation in strength than sulphate pulps. The difference in strength of the strong and the easy bleaching sulphite pulp, made by a large Canadian concern showed a difference of about 45%, while the difference between the strongest kraft pulp and easy bleaching sulphate pulp is only about 20%.

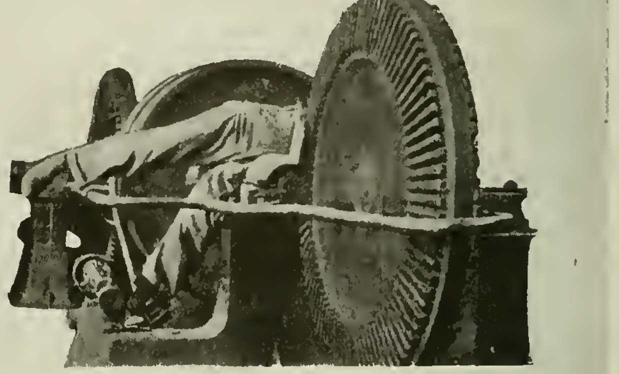
Kraft pulp is at present used not only in the manufacture of pure kraft papers but also in the making of various other grades of paper and board. It becomes particularly important to have a standard method for testing pulp for strength when mixtures of pulp are used because then the finished paper does not furnish any indication of the strength of any of the pulps used. An acceptable method for testing of strength of pulp must, of course, give concordant results on a given sample of pulp and as far as our experience with the method described above goes, there is no difficulty whatever in duplicating results within 2% even when the tests are made by 2 or 3 different operators.

The time required for a test is approximately 3½ hrs. and with a 4-jar ball mill 15 samples have been tested by one operator in 10 hrs.

Several attempts have been made to establish a relation between the time of beating and the Mullen test and the breaking length as determined with Schopper's machine, but so far no entirely satisfactory relation has been found.

Our object in publishing our experience with this method of testing pulp for strength is to obtain all possible constructive criticism of it, as the question of strength of pulp is of such importance to the industry in general that it merits all possible co-operation in order to establish a standard method.

CAUGHT!

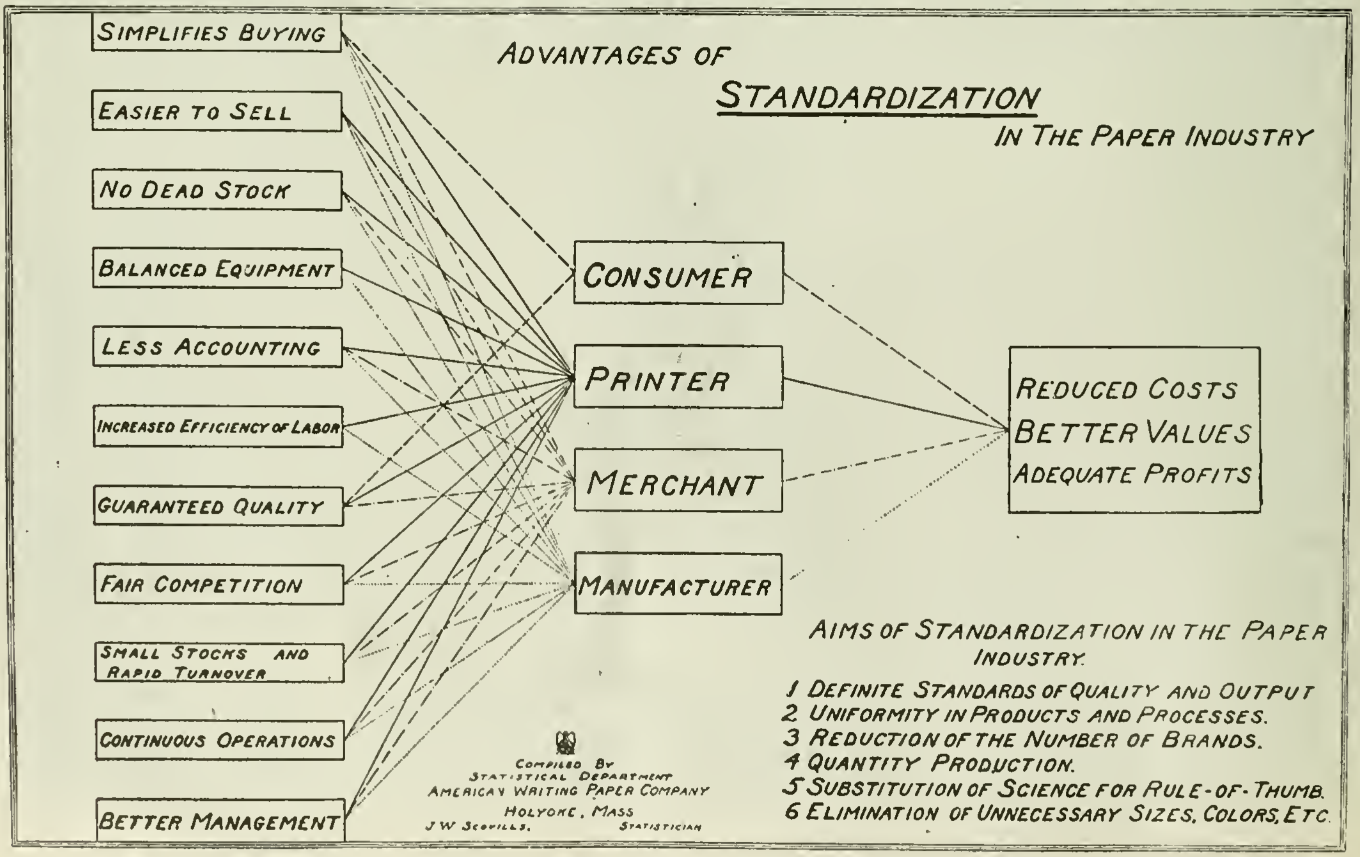


He had shut down the engine to make some repairs and was caught when a fellow employee started up.

If he had used this sign he would not have been injured.

Use the signs provided for your protection.

Courtesy, Champion Fibre Co.



AIMS OF STANDARDIZATION IN THE PAPER INDUSTRY.

1 DEFINITE STANDARDS OF QUALITY AND OUTPUT
2 UNIFORMITY IN PRODUCTS AND PROCESSES.
3 REDUCTION OF THE NUMBER OF BRANDS.
4 QUANTITY PRODUCTION.
5 SUBSTITUTION OF SCIENCE FOR RULE-OF-THUMB.
6 ELIMINATION OF UNNECESSARY SIZES, COLORS, ETC.

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HOLYOKE, MASS
J W SCOVILLS, STATISTICIAN

Reports of Technical Section Committees

COMMITTEE ON MECHANICAL STANDARDS.

Previous to the Annual Meeting held in January, 1920, your Committee sent out a questionnaire covering various items on which the Committee on Mechanical Standards considered information should be obtained and tabulated. Nearly one year has passed since, and in spite of repeated requests, only a very small number of questionnaires have been received, hence it is very difficult to make a reliable tabulation from these questionnaires. Furthermore, even the questionnaires received give, to a very large extent, rather incomplete information, and your Committee is of the opinion that the majority of the mills have not fully realized the advantages that would be obtained from standardization of mechanical equipment.

Under the circumstances the Committee considers that it shall make no further endeavour to compile information in accordance with the standards adopted by the various plants, as apparently the co-operation anticipated is not forthcoming.

Your Committee has viewed various publications in connection with metal alloys used extensively in the industry, and has authorized the publication of a translation from the Italian Chemical Gazette of an article on "Special Bronzes—Lead Bronzes" by **F. Giolitti** and **M. Marantonio.** The subject of acid-resisting bronzes was further gone into, and in appendix "A" you will please find particulars as to the findings. Under "B" in the appendix you will also find various data collected regarding lead and antimony alloys. The subject of Bearing Metal is referred to under "C," but we believe that the information collected thereon is not conclusive, and we would suggest further investigation on this subject.

Your Committee has reviewed various publications in being able to report satisfactory data in connection with the flow resistance of paper stock in pipes. Although numerous tests have been made, on account of the presenee of fibre, it has been impossible to keep the observing instruments clear when the consistency of stock was in excess of about 1%. Your Committee has spent considerable time in trying to perfect a method which would eliminate this trouble, and believes that the problem has been practically solved by the application of compressed air to keep free of stock all orifices of the instrument used, but unfortunately tests could not be made since the adoption of this method. We hope, however, to be able to complete these observations at a later date, and when completed purpose to publish this information in the Pulp and Paper Magazine, and we hope it will meet with your approval.

Respectfully submitted.—J. Stadler, J. O. Mason, A. P. Costigane.

A—Report on Investigation of Acid Resisting Bronze.

The present investigation covers the ordinary copper—tin—lead bronzes principally used in the chemical pulp industry.

In addition a few metal alloys, put on the market under various claims for strength and acid resisting qualities, have also been investigated.

An investigation of this nature naturally divides itself into the following parts:—The physical properties of the alloy, and its acid resisting qualities.

The Mechanical Properties of Copper-Tin-Lead Bronze

The alloys used for the investigation had the following composition:—

The Physical Properties of Copper-Tin-Lead Bronze

The alloys used for the investigation had the following composition:-

	Formula				Analysis			
	Copper	Tin	Lead	Phosphorus	Copper	Tin	Lead	Phosphor
1	90%	10%	0%	0.05%	89.92%	10.25%	0%	0.011%
2	85	10	5	0.05	84.97	10.33	4.5	0.024
3	85	5	10	0.05	84.77	5.54	9.63	0.062
4	80	10	10	0.05	79.73	10.27	9.87	0.088
5	80	5	15	0.05	81.10	5.12	13.66	0.066
6	76	9	15	0.05	75.85	9.40	14.72	0.066
7	70	15	15	0.05	70.23	15.54	14.03	0.066
8	70	10	20	0.05	71.00	9.93	19.00	0.048

Three test pieces were made from each of these alloys, with the exception of lots 4 and 5, from which four pieces were made.

The results of the physical tests given below are accordingly the mean value of three and, in two cases, four tests.

The casting of the test pieces presented considerable difficulties and, in overcoming these difficulties, a great deal of useful information applicable to foundry practice was obtained.

In the report of the Mechanical Standards Committee, submitted to the previous meeting of the Technical Section, some preliminary figures were presented on the physical properties of copper-tin-lead bronzes.

These figures are very interesting in the light of the present investigation, and, in the following discussion of the results below, references will be made to these figures.

In addition to the physical tests made, the alloys were examined under the microscope for the purpose of examination of their crystaline structure.

These microphotographs, having a magnification of 100 times their diameters, are re-produced below:—

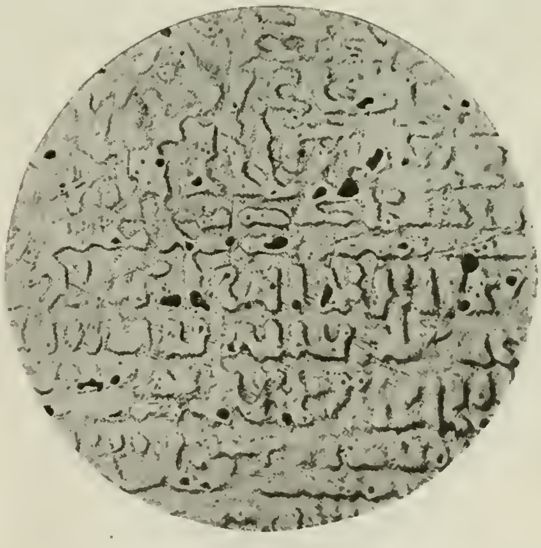

Fig. 1. Copper 90, Tin 10.—Round black spots are due to trace of lead markings; dendritic structure—same composition as balance of the metal. Note the globular form of the lead, like oil drops. It will not dissolve in the other metals.

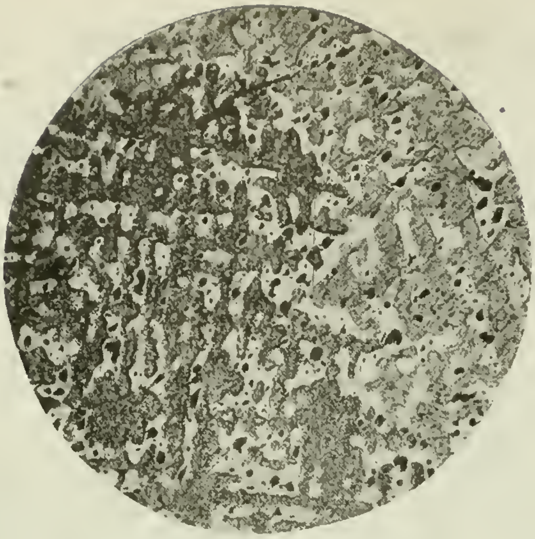

Fig. 2. Copper 85, Tin 10, Lead 5.—Shows oriented crystals, dark and light areas, dendritic forms well defined.

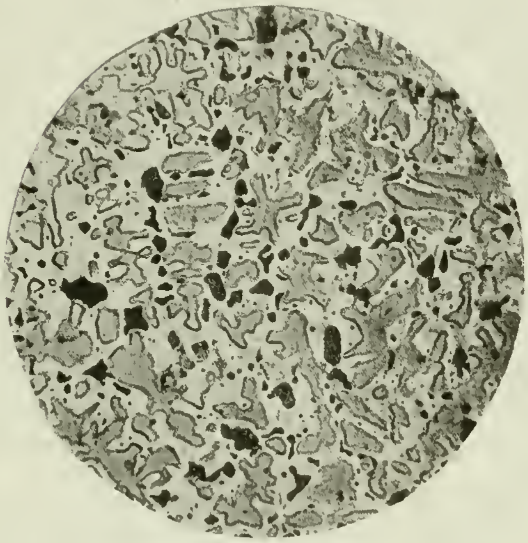

Fig. 3. Copper 85, Tin 5, Lead 10.—Black areas lead, no dross or porous spots, dendritic forms pronounced.

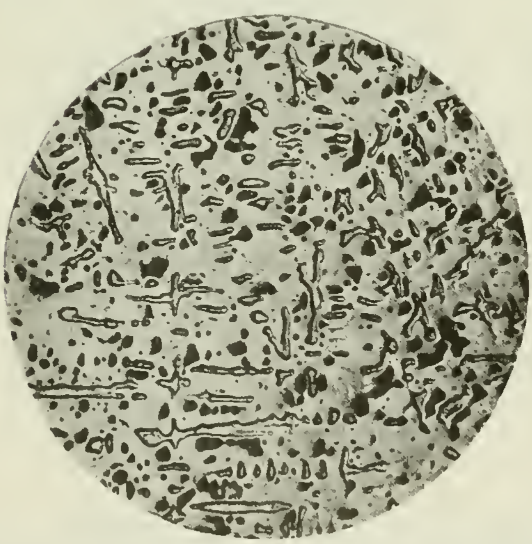

Fig. 4. Copper 80, Tin 10, Lead 10.—Dendritic form less marked than No. 3. Distribution of lead finer and more even.

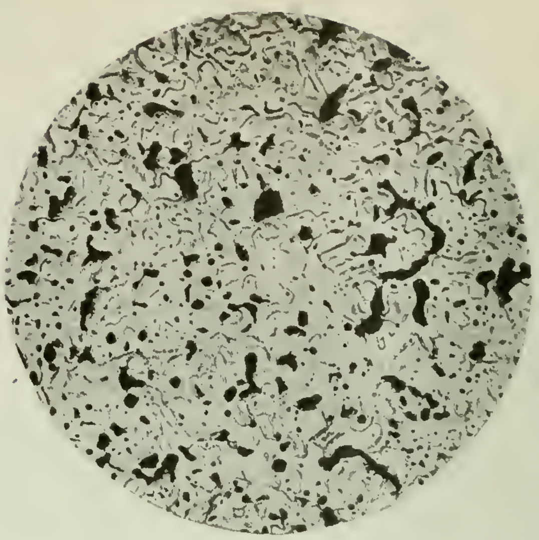

Fig. 5. Copper 80, Tin 5, Lead 15.—Shows lead lining out between the crystals. Due to increase in proportion of lead.

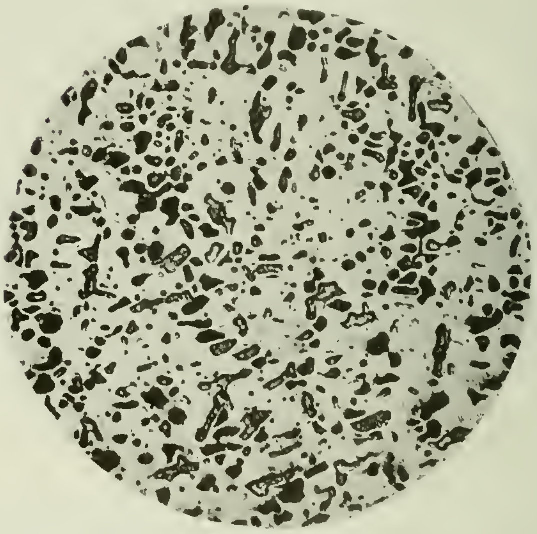

Fig. 6. Copper 76, Tin 9, Lead 15.—Lead dead black, and dendrites very dark and not to be confused with lead.

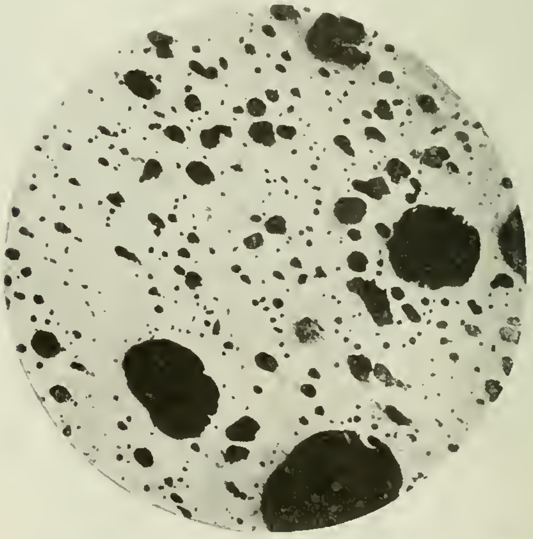

Fig. 7. Copper 70, Tin 15, Lead 15.—Note how lead has gathered into large globules. It is segregated badly (not shown by photograph). In light areas, with a glass, the network of copper-tin eutectic is plainly visible. This alloy was most resistant to etching solution.

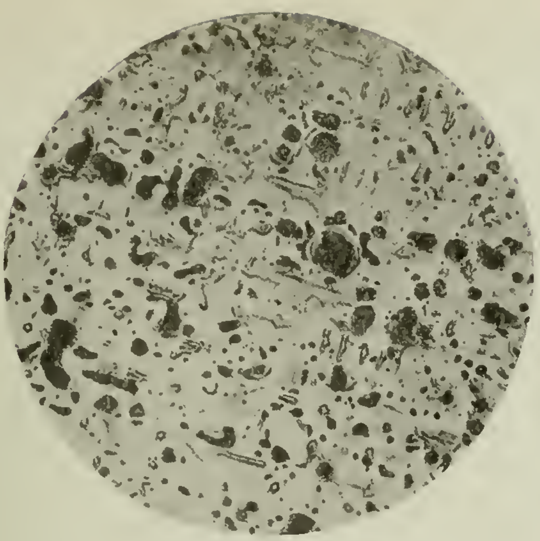

Fig. 8. Copper 71, Tin 10, Lead 19.—Lead more evenly distributed. Dendritic form again makes its appearance.

An examination of the microphotographs shows that all the alloys were made of sound metal. No oxides, dross or porous spots are found in the castings. In other words, the foundry practice has been very good.

In examining Fig. 1 round black spots are noted. These spots consist of lead globules. The lead is present in this as an impurity. It should however be noted that the lead does not unite with the copper and tin. Rather it appears throughout the alloy—up to a certain percentage—as globules resembling oil drops.

Figures 2, 3, 4, 5 and 6 show the dissemination of the lead throughout alloy.

In all these mixtures the non-tendency of the lead to unite with the copper and tin is clearly shown. The copper and tin, on the other hand, unite freely. As the proportion of lead increases, it shows the increasing tendency to separate into larger globules.

In Fig. 5, the lead has increased so that this metal begins to line out between the crystals. Finally, in Fig. 7, containing 15% lead, a very bad segregation of the lead is noticed. This is a most important feature of the alloy containing lead from 15% and up.

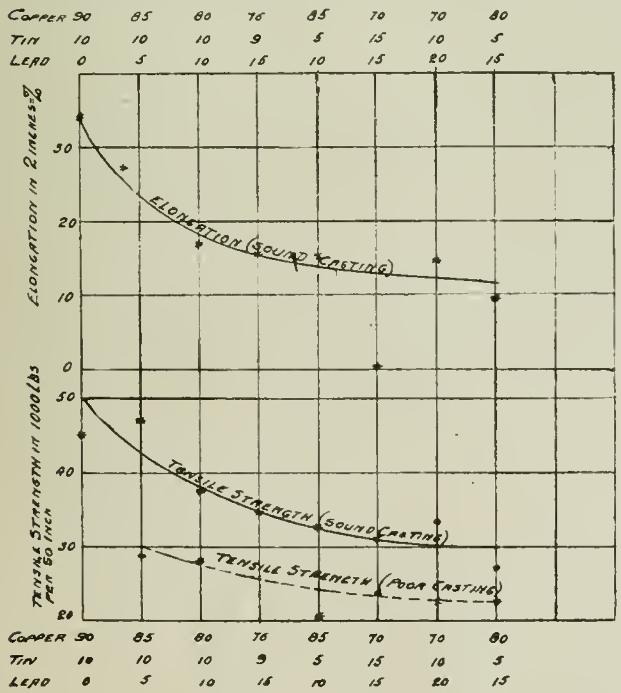

Fig. 1 Tensile Strength and Elongation of Acid Resisting Bronse

Graph 1.

Examined with a magnifying glass the network of Cu_3 Sn is plainly visible. This chemical compound of copper and tin does not show where the percentage of tin is below 10%.

In Fig. 8 a better distribution of the lead is shown. It should be noticed that this is due to an increased rate of solidification, an important feature which will be discussed later.

The physical tests were made in accordance with the test code of the American Society for Testing Materials and included tensile strength, yield point, elongation and reduction of area. In addition, hardness tests were made by means of a Shore scleroscope.

Table No. 1 gives the results of these tests, omitting the yield point and reduction of area as being of less interest.

Table No. 2 gives the results of the tests made for the preliminary report. (See Pulp & Paper, p. 134, 1920).

The mean value of the figures in the tables are shown in graphical form in Graphs 1 and 2.

TABLE NO. 1.

Alloy No.		Composition Cu-Sn-Pb	Tensile strength lbs. per sq. inch	Elongation per cent	Hardness Shore Scale
1	a	90-10	44,650	36.6	10
	b		44,650	30·0	
	c		44,700	36·0	
2	a	85-10-5	39,250	16·0(1)	10·5
	b		46,100	29·0	10·5
	c		47,350	36·0	
3	a	85-5-10	31,750	12·0	8·5
	b		33,850	12.0	
	c		32,800	22·5	
4	a	80-10-10	34,050	9·5(2)	10
	b		37,450	16.0	
	c		36,650	18·0	
	d		41,300	24·0	
5	a	80-5-15	28,300	16·2	7·2
	b		27,100	10·1	
	c		24,450	9·2	
	d		26,000	14·6	
6	a	76-9-15	34,000	13·4	10·2
	b		35,000	18·0	
	c		34,350	19·4	
7	a	70-15-15	31,000	none	17·5
	b		31,000	none	
	c		31,250	none	
8	a	70-10-20	32,300	20·1	10
	b		34,400	21·7	
	c		35,200	20·1	

Note—(1) Small dross spot, (2) slight flaw.

TABLE NO. 2.

Alloy No.	Composition	Tensile strength per sq. inch
1	85-10-5	28,706
2	85 5-10	20,427
3	80-10-10	28,150
4	80- 5-15	22,810
5	70-15-15	24,630
6	70-10-20	22,985

Along the abscissa on Graph No. 1 the composition of the various alloys has been arranged so as to show the effect of the increasing amounts of lead on the strength and ductility of the alloy, while Graph No. 2 shows the effect of decreasing amounts of tin on the hardness of the alloy.

An examination of these graphs reveals facts of great interest, and the conclusions to be drawn should be of considerable value to the users of acid resisting bronze.

In the first place, it is evident that, by increasing the tin (up to 20%), an alloy of great strength and hardness is obtained. Note that alloys Nos. 1 and 2 have a tensile strength nearly as great as that of soft steel.

Alloy No. 1, containing no lead, is however very hard to cast, and it was found to be very difficult to obtain sound castings.

The addition of a small percentage of lead greatly eliminated this troublesome feature, and, as shown by the curves in graph No. 1, up to 5% lead the strength and ductility are not greatly affected.

Beyond 5% lead, however, the strength of the alloy decreases rapidly, and it becomes also very brittle. No. 7 for instance, containing 15% tin, shows no elongation whatever.

Graph No. 2 demonstrates the fact that the tin is the element principally influencing the hardness of the alloy. Alloy No. 7, in spite of the presence of a high percentage of lead, has the greatest hardness. The general conception that lead makes the alloy soft therefore does not seem to be borne out by the investigation. That lead cannot have a very great influence on the hardness is furthermore evident from examination of the microphotographs.

The lead does not amalgamate with the other metals, but appears, when the percentage is sufficiently high, as solid masses of solidified lead in metal.

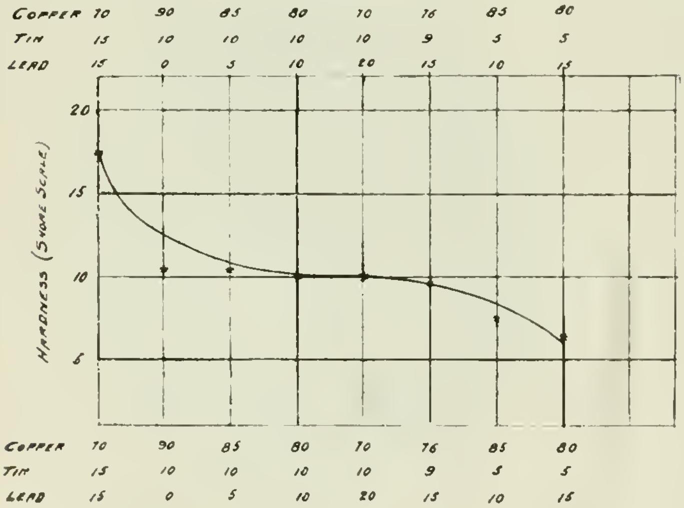

Fig. 2 Hardness of Acid Resisting Bronze

Graph 2.

The dotted curve in Graph 1 shows the strength of the various alloys obtained from a certain foundry, and represents extremely poor foundry practice. It will be noted that the tensile strengths of these castings are over 10,000 lbs. less than that for the sound castings.

This fact is further brought out by the tests made on a test piece taken from a bronze digester sleeve which had given very poor service, and which had to be removed after a short time. The results of this test show:—

Composition—Copper 85%, tin 10%, lead 5%; tensile strength lbs. per sq. inch, 19,387; elongation in two inches 3·5%.

This casting was very porous and spongy, which of course accounts for its poor wearing qualities, also the extreme brittleness of this casting. Fig. 9 shows the structure of the test pieces. It is extremely porous and contains blow holes over the entire surface. This condition is due to defects in the foundry practice.

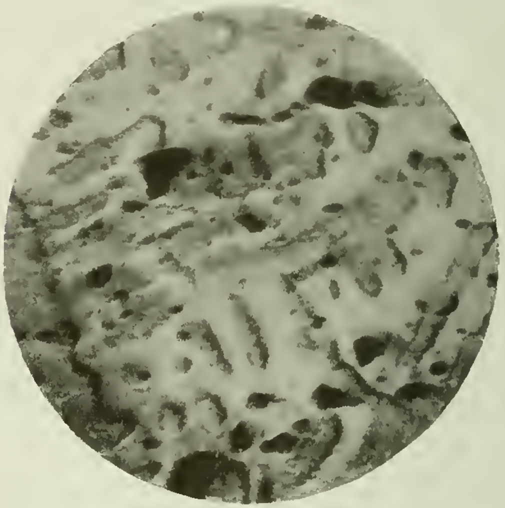

Fig. 9.—Test piece extremely porous and contains small blow holes over entire surface.

The acid resisting qualities of the bronzes.

The present investigation has established the fact that little or no conclusions can be drawn from laboratory tests as to which alloy best resists the action of sulphite liquor.

The different alloys have also been exposed to this action in a sulphite digester during a considerable period. In presenting the results of this test for what they are worth (table 3), it is recommended that fittings of various composition be tested under actual operating conditions and accurate records kept to show the performance.

Table 3 shows, however, that the increased content of lead in the alloy has no very appreciable effect on its acid resisting qualities.

TABLE No. 3.

	Composition			% loss in weight after 3 weeks exposure in Sulphite Digester
Alloy No.	Copper	Tin	Lead	
1	90	10	0	9·9
2	85	10	5	10·5
3	85	5	10	8·9
44	80	10	10	12.1
5	80	5	15	8·5
6	76	9	15	11·7
7	70	15	20	12
8	70	10	15	11·7

Conclusion.

The present investigation has brought out the great importance of a good foundry practice. No matter what the composition of the alloy is, with poor foundry practice, the required strength, ductility or toughness and hardness is not obtained.

It should therefore be insisted on that all castings be free from flaws, dross, porous spots, and the surfaces free from scale, sand or loam.

Castings which do not meet these requirements should therfore be rejected.

As to the composition of the alloy, it is apparent that an increase in lead above 5% does not fulfil any useful purpose. The strength and toughness rapidly decrease while, as far as can be concluded from the present tests, the acid resisting qualities are not materially affected.

Any effect of this constituent is probably due to the fact that the presence of a high percentage of lead makes it very difficult to obtain a sound casting, with the result that acid eats its way into the interior of the casting, quickly disintegrating it.

The addition of tin, up to 20%, on the other hand, gives an alloy possessing great strength and hardness.

It should be noted, however, that an alloy containing over 10% tin has a very complex freezing point curve; between 10 to 20% there being no less than three distinct freezing points.

In its practical application this means that such an alloy solidifies in three separate portions, thus accelerating the tendency to segregation with the consequennt decrease in strength and ductility.

The presence of phosphorus in the bronze, up to 0·1%, has a very marked effect upon its properties, greatly increasing its strength and toughness and also notably facilitating the founding. It is therefore recommended that in any specification for bronze the presence of not less than 0·05% phosphorus should be insisted on.

In taking the points brought out by the present investigation into consideration, the suggested specification for acid resisting bronze will then be as follows:

Copper	84½ — 85 %
Tin	9½ — 10½%
Lead	4½ — 5½%
Phosphorous not less than	0·05%
Impurities not more than	0· 5%

Addenda.

In addition to the above, a few acid resisting metals, sold under trade names, have been investigated.

Of these metals, two, "Aterite" and "Meco," have a very similar chemical composition.

They are both alloys, containing chiefly copper, nickel, zinc with a small addition of lead, silicon and iron. Of the two "Meco" is the higher in copper, while "Aterite" is the higher in nickel. "Aterite," as a matter of fact, appears very similar in composition to Monel metal.

Both metals have a very satisfactory tensile strength —40,000 lbs. per sq. inch—and the hardness ranges from 25—30 points (Shore scale).

The exposure of these metals to moist SO_2-gas shows that they are both affected to some degree. "Aterite" lost during an exposure equivalent to 31 days 2·5% in weight, while in the same period "Meco" lost 1%.

Both metals therefore appear to possess notable acid resisting qualities.

At the present time, however, the market price of these metals does not allow them to compete with the copper-tin-lead alloys.

The third metal investigated is sold under the name of "Promet Bronze." It is a copper-zinc alloy, with a tensile strength of 40,000 lbs. per sq. inch, an elongation of 48%, and a hardness equal to 10 points. It is a very strong and tough alloy, but, owing to its high content of zinc, is hardly suitable for sulphite mill work.

B—Report on Investigation of Antimonial Lead.

This investigation was made for the purpose of ascertaining the most suitable composition of antimonial lead used in the chemical pulp industry.

The questionnaire sent out by the Committee on Mechanical Standards brought out the fact that there is a great diversity of opinion among the different mills in regard to this composition. Some mills advocate lead with as little as 2% antimony, while others favor a lead alloy containing 15% antimony.

It is therefore apparent that an investigation of the physical properties of antimonial lead alloys should be of considerable interest to the members of the Technical Section.

Preliminary to carrying out the physical tests, a great deal of experimenting was done to obtain homogeneous test pieces. Chemical analysis showed that the antimony has a great tendency to segregate from the lead in mixtures containing over 13·5% antimony.

This is particularly the case when the rate of solidification is slow. The test pieces, finally used for the testing, were carefully analysed and were found to be sufficiently homogeneous. The test pieces contained antimony in proportions varying from 2.5% to 17.8%.

On each of these alloys the following tests were made—tensile, compressive and transverse strength; elongation; reduction of area and hardness.

The tensile strength, elongation and reduction of area were determined on test pieces of the usual half inch cross section, and are given in lbs. per square inch.

The compressive tests were made on cylinders having a height equal to 2 diameters, and are given in lbs. per square inch.

The transverse tests were made on 1" square bars, supported 8" apart. The hardness tests are expressed in points of the Shore scale.

The results of the tests are given in Table No. 1, and these figures representing the mean value of, in some instances, three tests, are presented in graphical form in Diagrams 1, 2 and 3.

In the table the figures giving the reduction of area have been omitted as being of less interest.

Physical Properties of Antimonial Lead:

Test Piece No.	Composition		Transverse Test		Tensile Strength	% Elongation	Compressive Strength (1)	Hardness
	Sb	Pb	(1)	Max: Load				
1	2.8	97.2	257	746	3696	35	3084	1.7
2	5.5	94.5	615	1065	3610	30	2664	2.1
3	7.5	92.5	777	1150	4810	30	6174	2.4
4	10.00	90.6	527	1386	7240	18	8838	2.9
5	11.95	88.05	944	1442	8000	20	7250	2.9
6	12.76	87.24	815	1442	7853	14.5	6978	2.6
7	14.10	85.90	-	-	6344	4.5	8050	2.6
8	14.93	85.07	1007	1636	-	6.0	-	2.8
9	15.93	84.07	1052	1606	6456	4.5	7870	2.6
10	17.49	82.51	1302	1538	6759	3.0	9170	2.6

(1) To elastic limit

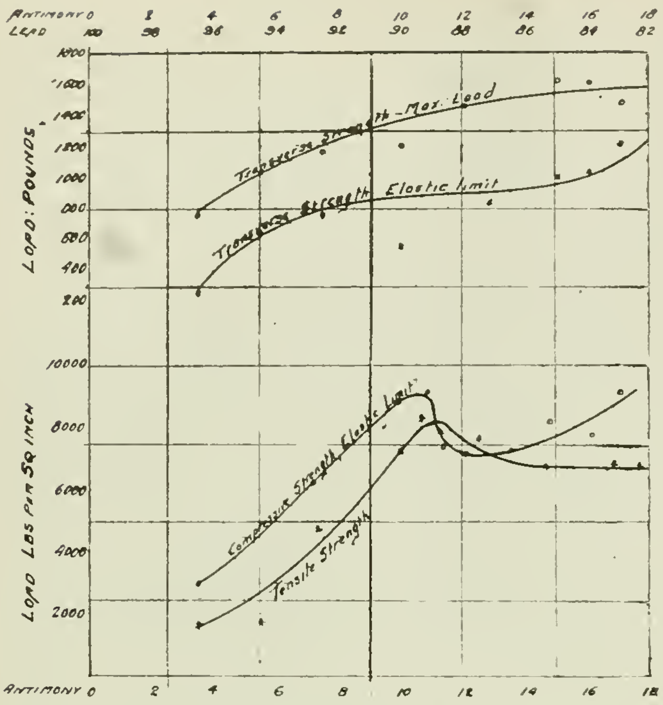

Diagram 1.—Tensile, compressive, and transverse strengths of antimonial lead.

Diag. 1 shows graphically the tensile, compressive, and transverse strength, and Diag. 2 the elongation and hardness of the various mixtures.

Diag. 3 shows diagramatically how the test bars stand bending, the curved lines representing the bending of the bars at the point of failure.

An examination of the diagrams reveals some very interesting information.

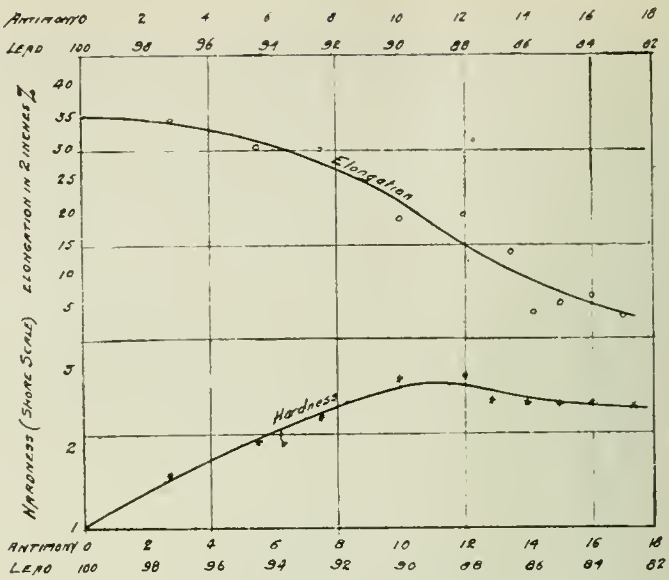

Diagram 2.—Hardness and elongation of antimonial lead.

The tensile strength and the elongation increase with the addition of antimony up to 11%.

Above 11% the strength rapidly decreases, and above 13% the metal becomes very brittle.

The compressive strength also increases up to about 11% antimony; beyond this percentage, it shows an extreme irregularity. It should be remarked that compressive tests were made on cylinders compressd to one half of their height. In many of the specimens containing a higher per cent of antimony, however, the test pieces partially broke along several cleavage planes in a crumbling way. These tests have therefore been omitted in the table as not representing the maximum load to one half the height.

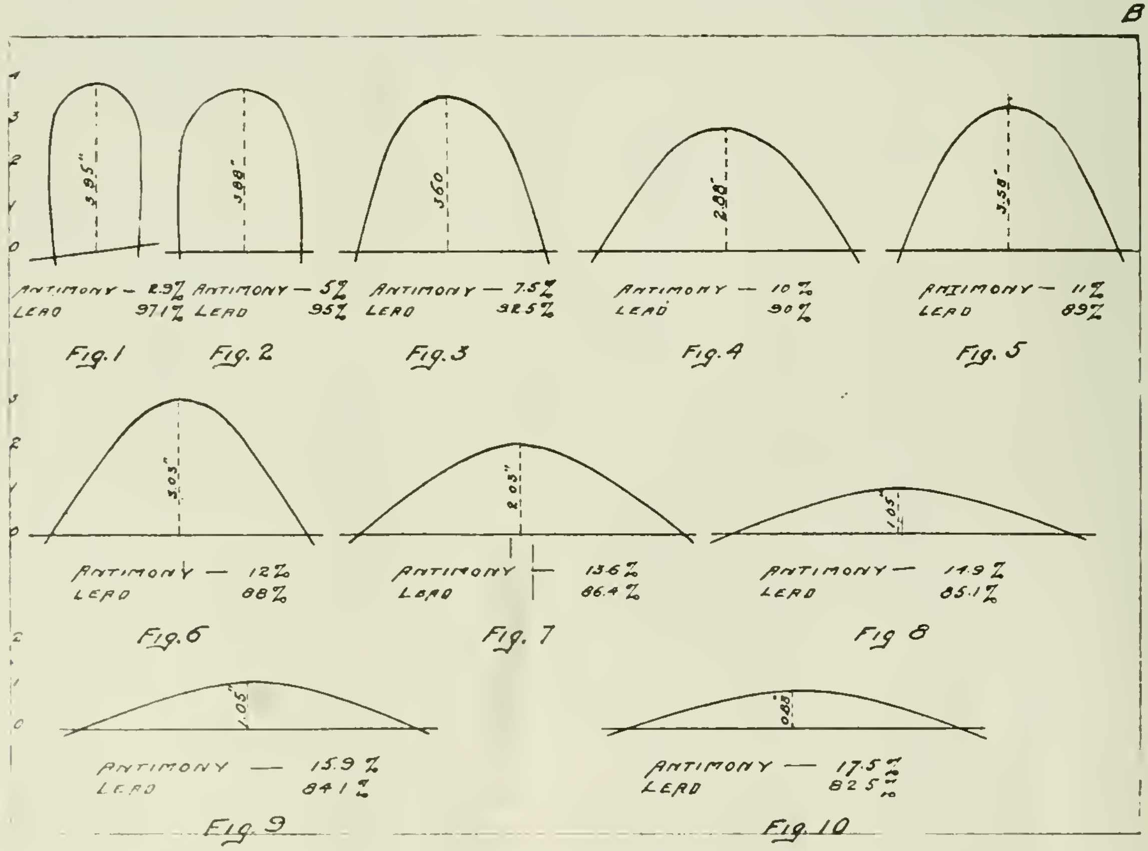

Diagram 3.—Antimonial lead alloys: Transverse tests of 1 in. square bars, supports 8 ins. apart. Curves show amount of bending where failure occurred.

The maximum transverse load represents the pressure at which the bars failed.

It was attained shortly after the elastic limit had been reached.

The hardness tests show a considerable variation above 10% antimony. When it is remembered, however, that above 13·5 antimony the alloy consists of hard antimony crystals imbedded in a softer lead-antimony eutectic, it appears quite natural that a uniform hardness cannot be expected.

Conclusion.

As antimonial lead is used principally for lead piping, the physical requirements of this will naturally be the governing factors in determining the composition to be used.

The requirements of a lead pipe is that it does not collapse under its own weight, and that it does not sag, creep or bend under exposure to the pressure and temperature of the digester relief gases.

On the other hand, it should withstand the blow of a heavy object and, if bent, it should not break. In other words, it should not be brittle.

A study of diagrams 1, 2 and 3 indicates that the alloy containing 10 to 11% antimony best fills these conditions. Below 10% of antimony the tensile and compressive strength of the alloy decrease rapidly and while more plastic it is very soft. By an addition of more than 11% antimony, on the other hand, no advantage is gained, as above this percentage the alloy becomes rapidly brittle. It is furthermore extremely difficult to obtain homogeneous castings with antimony present in proportions above this percentage.

The investigation has braought out the fact that good foundry practice is necessary in order to obtain a homogeneous alloy, and it is therefore recommended that the necessary chemical and physical tests be included in the specification for antimonial lead.

C—Report on Investgation of Bearing Metals.

The investigation covered in this report is hardly more than preliminary, inasmuch as a subject of this magnitude requires a good deal more time than has been at our disposal.

A rather extensive search of the technical literature has been made for the purpose of finding out what has been done to standardize the bearing metals used for various duties.

It appears, however, that little or nothing is to be found, except what has been published by some of the railroads.

One most important fact has been brought out in regard to white bearing metals, namely that Babbitts with a high per cent tin have been entirely superceded by alloys containing chiefly lead and antimony.

The following formula is given as an example of the composition generally in vogue some years ago:—

Tin	80%
Antimony	10%
Copper	10%

This Babbitt has now been discarded by some of the largest railroads in America for a Babbitt, used for all general purposes, with the following composition:—

Tin, not below	6½%
Copper	½ to ¾%
Antimony	14—16%
Lead	77—79%
Phosphorous	0·025—0·110%
Total impurities including zinc, iron, etc.	under 0·5%

This Babbitt is also used in bearings for electric motors under 5 H.P. in size.

Another metal, containing less copper and a somewhat higher percentage of antimony, and appearing under the name of Zero metal, has the following composition:—

Tin	6·14%
Copper	·10%
Antimony	18·53%
Lead	75·23%

The present investigation has been confined to white metal alloys. It has consisted in an investigation of the physical characteristics of two Babbitts which, according to the returned questionnaires of the Mechanical Standards Committee, seem to be extensively used by some of the mills.

In addition, three metals, thought to be of considerable interest, have been similarly investigated. These metals appear on the market under trade names and are not sold on an analysis basis.

The results of these tests together with the composition of the metals is given in table No. 1.

The factors chiefly influencing the selection of a bearing metal are, its antifriction properties, wearing qualities, and price.

Of these three factors, the first two can only be determined through actual tests under actual operating conditions.

The third factor, price, is of course of considerable importance.

TABLE 1—Physical Characteristics of a unmber of Bearing Metals:

Name	Composition					Hardness Shore scale	Tensile Strength		Compressive strength	
	Copper %	Tin %	Antimony %	Lead %	Arsenic %		Tensile strength	Elongation %	Elastic limit	To ½ original height
Babbit #1	1.0	60.0	8.9	30.1		2.86	9450 9622	10.0 15.8	4615 6446	12438 12154
Babbit #2	2.0	44.5	9.0	44.5		2.78	7281 7675	2.5 3.5	6585 7015	9631 9714
Promet "Genuine"	0.25	0.47	13.49	84.9	0.89	3.24	8546 7730	5.0 2.5	4080 4621	22945 21060
Promet " X X "	0.25	0.38	13.58	84.60	1.19	3.29	8674 8036	2.5 3.5	7040 6552	20730 21983
Frary Metal (1)	-	-	-	99.8	-	4.39	13327 15295	14.5 13.5	6115 5308	14462 11080

(1) Barium = 0.82 %
Calcium = 0.12 %

It is therefore thought that it would be of interest to give the relative cost of the bearing metals investigated. These costs are given in table No. 2, and they are based on the present market price of the metals of which they are composed.

The prices of the metals constituting the alloys as quoted by Canadian manufacturers or wholesalers during the month of December, 1920, were as follows:—

Copper	Lb.	$0·18½
Tin	"	0·50
Antimony	"	0·09
Lead	"	0·09½
Arsenic	"	0·12

The physical characteristics given in table No. 1 are very interesting.

Alloys Nos. 1 and 2 show good compressive strength, although No. 2 appears to be a good deal more brittle than No. 1. This resistance to pressure, one of the most important of the qualities of a bearing metal, is due to the presence of antimony.

The two alloys called Promet "Genuine" and "XX," although very low in tin, have a remarkably high tensile strength. Except for the presence of arsenic in these alloys, they appear to be very similar in composition with the railroad standard bearing metals. This presence of arsenic should be particularly noted. Together with antimony, it raises the resistance to pressure remarkably.

At the same time, it should be noted however, it makes the alloy very brittle, as is shown in the low elongation of the Promet metals.

The last of the series, the metal called "Frary Metal," is one of the most interesting alloys appearing in recent years. It was developed in the United States during the war. As is shown in the analysis given in the table, it contains lead with a very small addition of metallic calcium and barium. This presence of small quantities of alkaline earth metals has completely changed the properties of the lead. Note its extreme hardness and high tensile strength. Although not quite so high in resistance to compression as Promet metals, it has an elongation more than four times that of the latter. It therefore has none of the brittleness of antimonial lead.

Tests made by the United States Bureau of Standards showed that a bearing made up of this metal, running under a load of 1000 lbs. per square inch, at a speed of 400 R.P.M., was still in good condition after 23,200 revolutions, while a genuine Babbitt bearing, running under a load of 400 lbs per square inch, at 600 R.P.M., seized and began smoking after only 6.600 revolutions.

Table No. 2, taken in conjunction with table No.1, shows pretty clearly that the strength, according to the wearing qualities, of the lead-antimony-tin alloys increases with the antimony, while the price increases with the tin. In general it can be said that the bearing metals mostly used are unnecessarily expensive. They too often contain higher percentages of high priced metals than is really required, a fact which, it may be mentioned, was borne out by the experience of European machine builders during the war, when cheaper substitutes had to be used.

It is apparent that there is a great deal to be done along the lines of investigations of the properties of bearing metals, particularly in regard to many of the metals, such as the alkaline earths, magnesium, etc., which have recently been applied to the manufacture of bearing metals.

A good deal of work could furthermore be profitably expended on the standardization of the alloys at hand.

TABLE 2—Metallic Value of a number of Bearing Metals:

Name of Alloy	Composition					Metallic Value
	Copper %	Tin %	Antimony %	Lead %	Arsenic %	Cents per lb.
Genuine Babbit	10	80	10			42.75
Babbit #1 (1)	1.0	60	8.9	30.1		33.79
Babbit #2 (1)	2.0	44.5	9.0	44.5		27.65
Railway Standard	0.5	6.5	16.5	76.5		12.08
Zero Metal	0.1	6.14	18.53	75.23		12.91
Promet "G"	0.25	0.47	13.49	84.9	0.89	9.67
Promet " X X "	0.25	0.38	13.58	84.6	1.19	9.64
Frary Metal (2)	-	-	-	99.8	-	9.48 (3)

(1) Babbit used in Pulp & Paper Mills - See table #1.

(2) Barium = 0.82 %
Calcium = 0.12 %

(3) The prices of Barium and Calcium are not included.

COMMITTEE ON CHEMICAL STANDARDS.

The Committee on Chemical Standards wishes to submit the following report for the consideration of the Technical Section:

Strength of Sulphite Pulp.

Your committee has reviewed the report of the committee presented on January 30th, 1919, by Messrs. Decew, Hovey, Cooper and Mason, and has no suggestions or alterations to make in reference to the methods in the report. Through correspondence with different laboratories we have discovered that the present ball mill method for measuring strength of sulphite does not give comparable results when performed by different operators. This leads us to believe that the method produces results which may be considered more directly as a measurement of the effect of beating than as a true determination of sulphite strength. It is our recommendation that this particular question be referred to a committee on sulphite pulp for consideration, and that this committee be requested to consider the subject in its broad aspect and endeavor by co-operation with different mill laboratories to develop a method which will give a true indication on the actual strength of sulphite pulp.

Coal Tar Dye Stuffs.

Your Committee has made several examinations into the various coal tar dye stuffs marketed in Canada. The differences in quality in dye stuffs sold under the same name has been particularly noticeable, and it is the recommendation of your committee that a special committee be appointed to completely review and carefully study the entire question of dye stuffs in relation to their use in paper manufacture.

Paper.

This committee would recommend to the consideration of the Association a detailed study of methods which can be presented for adoption as standard for grading of news print and wrapping papers. We would recommend development of this study with the idea of making a report of quality on a definite percentage basis. We believe that each of the following factors should be considered:—Weight, finish, cleanliness, strength, formation, thickness, color and moisture.

In the opinion of the committee it appears reasonable that a definite value can be derived which will represent 100%, and that this value can be preserved in the form of comparison standards where such standards are needed. Working from these standards the percentage value of each individual factor may be determined, e.g., the paper may have a formation of 90%, finish of 85%, and cleanliness of 60%, etc. The committee would further recommend that weighted values be assigned to each quality factor, to the end that final numerical quality percentage may be determined and percentage value representing the actual value of the paper.

Evaluation of Clay Filler.

WATER.—Ignite 2 grams of the clay in a porcelain crucible at red heat. The loss in weight X 50 = per cent of free and combined water.

COLOR.—The comparison of different clays for color or whiteness should be carried out with both the dry and the wet clay. The dry clays should be placed side by side on a porcelain slab for examination and comparison with mill standards. The wet clays should be made up with water to the consistency of a thick paste and compared in the same manner.

FINENESS.—Fineness should be measured by mixing a 20 gram sample with water, rubbing up in a mortar and straining through a 100 mesh sieve. The residue remaining shall be dried and weighed.

ELUTRIATION.—Weigh 2 grams of the sample into a Nobel or Schultze elutriating apparatus and continue flow of water at a rate not to exceed 20 c.c. per minute until an effluent from the last reservoir is free from the suspended material. Filter, dry and weigh the residue in each reservoir separately.

ALTERNATIVE METHODS.—Weigh a 2 gram sample into a 2 meter round bottom flask and introduce water through a 5 m.m. tube just touching the bottom of the flask. At a rate not greater than 20 c.c. per minute continue flowage until the effluent is free from suspended particles. Filter, wash, dry the residue in the flask.

PLASTICITY.—Make up a thin starch paste by boiling 1 gram of starch in a litre of water. Place 100 c.c. of this paste together with 5 grams of the sample of clay in a graduated glass and shake well. Allow to stand at rest for 24 hours. The finer and more plastic the clay, the greater its miscibility with the starch paste, i.e., the less it settles to the bottom of the vessel. Various samples may be compared in this way.

Respectfully submitted,
A. G. DURGIN, *Chairman.*

COMMITTEE ON EDUCATION.

Text Books.

Your committee has continued to give much co-operation with the Joint Executive Committee on Text Books. This has consisted in the reading over of manuscripts and conferences with the Editor, Chairman and Secretary. On two occasions since our last annual report, your committee has met the Committee on Education of the T. A. P. P. I. full session at New York in April, and at Saratoga in September. We are pleased to report the great singleness of purpose and unanimity has characterized these meetings, and that throughout the industry the greatest interest is being maintained in the production of text books.

Efforts have been concentrated on Volume I, containing Arithmetic, Elementary Applied Mechanics, How to Read Drawings, and Elementary Physics, in order to produce specimens for this meeting. Volume II. will contain the other preliminary matter, Mechanics, Hydraulic, Elements of Electricity, and Elementary Chemistry. The work for this volume is all in the printer's hands. The issuance of the preliminary matter in two volumes will make the complete set five volumes instead of four.

To expedite matters, it has been found advisable to engage a draftsman conversant with the industry to assist the editor in preparing matter for illustrations. A good man has been engaged to work at Ste. Annes, and it has been found possible to reduce the staff at Scranton by one.

As an illustration of the manner of preparing the manuscript, we might cite the section on the paper machine. This manuscript was prepared by Mr. Brassington and passed on by the Editor to two groups of mill superintendents. The first group was that of superintendent in the Niagara Peninsula, representing sulphite, news, book, writing, tissues, and light wrappings. These gentlemen, with members of your committee, took one evening to look through the manuscript, then divided it among them for critical reading, and after two weeks had another meeting, exchanging criticisms. This resulted in many useful suggestions, a better statement of some points and the correction of errors that could only be noted by men of lifelong practical experience. The manuscript is now in the hands of a similar group in the neighbourhood of Holyoke, Mass.

The Editor, Mr. Stephenson, is a member of this committee, but his fellow members feel it will not be amiss to say that he has labored long, patiently and effectively, and that the industry, as a whole, is greatly indebted to him and his editorial colleagues, Messrs. Foster and Clark.

Student Work.

Members of your committee have addressed students at McGill and Toronto Universities on the general principles of the industry. During the vacation season of 1920, some sixty students of Canadian Universities were employed in the mills. This is just twice the number for 1919, and is a very good evidence of the interest of our universities and students in the industry, and also indicates that the mills appreciate the possibility of growing good stock for technical staffs. Fourteen essays of high literary and technical excellence were entered in the competition.

The thanks of this committee are given to the mills whose co-operation makes this effort possible, and to Mr. Dawe, who has done nearly all the work incidental to putting the universities in touch with the mills.

Respectfully submitted—Geo. Carruthers, A. P. Costigane, D. Daverin, C. N. Gain, J. N. Stephenson. T. Linsey Crossley, Chairman.

COMMITTEE ON TESTING MOISTURE IN PULP.

Your committee beg to report the following:

1. The only pulp on which your committee have recommended no decided methods for testing are Dry Pulp in rolls and Dry Pulp made into sheets and then pressed into bales.

2. Your committee have previously pointed out three methods that are in use in testing same, namely:

1. The Strip Method.
2. The Disc Method.
3. The Wedge System as used in Great Britain and Scandinavia.

Your committee feel that inasmuch as these three methods are standards in themselves it is mainly a question as to which one is most suitable to be used, depending on conditions under which tests are taken. Your committee have noticed that both the American and English Technical Sections are working on these problems, and have not as yet decided which method is most suitable.

Your committee feel that a committee should be composed from these three different Associations and have power to decide as to which of above methods, or if all three, should be used in matters of testing dry pulp in rolls or bales.

E. B. SLACK, Chairman.

Canadian Fairbanks-Morse, Ltd. extend a cordial invitation to all pulp and paper men to visit their extensive show rooms at 84 St. Antoine St., a few doors east of Windsor Station.

Hydraulic Machinery Co., Dominion Engineering Works, and other concerns in the trade also extend a welcome to visitors.

COMMITTEE ON ABSTRACTS AND PUBLICATIONS.

Your committee reports having been at work continually since the last meeting. An optimist might call it a progress report. We have arranged for the abstracting British Journals by the Librarian of the Spanish River Pulp and Paper Mills at Sault Ste. Marie. Several tentative arrangements for an abstractor to take care of Swedish and Norwegian journals have so far been without result and we are now endeavoring to make arrangements for these periodicals.

Our co-operation of the American Committee continues, and Mr. C. J. West of the A. D. Little, Inc., is doing most of the abstracting across the line.

We hope during the coming year to arrange for better service with regard to reviews of books relating to the industry.

In the issue of the Pulp and Paper Magazine for December 16th, there is an article by Miss A. B. Collins, Librarian, of the Spanish River Pulp and Paper Mills, on "How a Paper Mill Uses the Literature." Appended to Miss Collins' article is a revised classification of the literature according to the plan worked out some years ago by your committee. Respectfully submitted—O. F. Bryant, R. L. Campbell, S. Wang, J. N. Stephenson, Chairman.

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126 Ft. PAPER BELT AROUND THE WORLD.

According to the Spanish River News, a newsprint mill using 150,000 cords of wood annually, would furnish the following interesting data:

Wood.

150,000 cords of wood used per year.

Wood used in one year placed end to end and average size 7 inches diameter, would reach one half way around the world.

It would require 10,000 railroad cars to carry this wood, these cars would make one train 80 miles long of 200 trains of 50 cars each.

This wood piled in standard cords 4'x4'x8' and placed end to end would make a pile 227 miles long.

About 220 sq. miles of land is cut over and found unfit for wood each year.

Newsprint.

The area of paper made per day is 46,846,832 sq. ft. and in one year 14,522,517,920 sq. ft., this is equal to 1075 acres per day and 333,391 acres per year, or 1.5 sq. miles per day and 521 sq. miles per year.

All paper cut into a strip one inch wide would reach 4.4 times around the world each day and 1,368 times in one year.

The paper cut into standard roll widths of 72 inches would reach from Montreal to Winnipeg each day and around the world in 28 days or 12 times a year. One year's run would make a belt around the world 126 ft. wide.

If all the newsprint in one day was cut into 72 inch rolls and these rolls placed on end, side by side, they would completely over a tennis court inside the lines. In one year stacking each day's run on top of the others, on the tennis court we would have a pile over one quarter of a mile high.

If all these rolls were placed one on top of the other end for end the pile would reach one half mile high in one day and 150 miles high in one year.

What makes the artificial limb manufacturers rich? Careless workers. Get together, men, and put them out of business.

PULP AND PAPER NEWS

The English River timber limit is now off the Ontario Government's hands. Last week E. W. Backus, the American pulp magnate walked out of the Parliament buildings with the last contract completed between himself and the Drury Government. The consideration for the 2,500 square miles of pulpwood lands in the Rainy River district near Kenora, is $50,100 and the regulation dues.

Lieut.-Col. Thomas Gibson, Vice-President, and J. G. Gibson, Secretary of the Spanish River Pulp and Paper Mills, Limited, have returned to Toronto after attending the annual president's banquet of the company at Sault Ste. Marie, Ont., when addresses were given by Hon. Beniah Bowman, Hon. G. D. Robertson, President George H. Mead Lieut. Col. Gibson and others. A feature of the gathering was the address of Col. Gibson, who, in addition to being the vice-president, is the company's legal adviser. Col. Gibson reviewed the history of the company from its inception to its present status as one of the largest industries in the Dominion. It was pointed out that the first mill was built by E. H. Clergue in 1894, which was a ground wood mill, having a capacity of 100 tons a day. In 1901 a sulphite mill was built at the Soo with a capacity of eight tons a day. Today the new ground wood and sulphite mills are perhaps the finest in the world. The present production of the company's various mills is 625 tons of newsprint, 500 tons of ground wood, 230 tons of sulphite and 40 tons of board daily, which represents 20 per cent of Canada's production and 8 per cent of the production of the American continent. The banquet was the culmination of the annual conference between the management of the company and the heads of departments from each of the three mills, Sault Ste. Marie, Espanola and Sturgeon Falls.

Mr. W. F. Christie, of John Christie & Co., paper stock dealers, Adelaide Street, Toronto, has gone on a business trip to some of the American mills.

Mr. H. W. Guettler, of Chicago, President of the Canadian Barking Drum Company and Fibre Making Processes, was in Toronto this week calling on the Toronto office of the company in the Royal Bank Building. While in Montreal he called at the office of the Pulp and Paper Magazine.

The Canadian and Chicago offices of the Canadian Barking Drum Company have installed a barking drum equipment in the new plant at Sorel, Que., of J. H. Dansereau. Machines have also been sold recently to the Ontario Paper Company, at Thorold: the J. & J. Rogers Company of Ausable Falls, N. Y. and the Union Bag and Paper Company at Cheyboygan, Mich.

The capital stock of the Spectator Printing Company, Limited, of Hamilton, Ont., has been increased from $20,000 to $500,000 by the creation of 4,800 shares of $100 each.

Mr. R. H. Bryan, of the Brompton Paper Company, was in Toronto during the week on one of his regular business trips.

Mr. C. R. Whitehead, President of the Wayagamack Pulp and Paper Company, Limited, sailed a few days ago for England on a business trip. Mr. Sherriff, of the Hodge-Sherriff Paper Co., Ltd., selling agents for the Wayagamack people, is still in England.

The wrapping paper manufacturers will hold a meeting in Montreal on January 19th next. Several will be present from the Toronto district, including Mr. A Huntley, of the Hodge-Sherriff Paper Co., Ltd: Toronto.

The Brockville Recorder has been continuously published for the period of a century and to commemorate the event the newspaper has erected a very handsome bronze tablet in its offices. The tablet contains the names of six editors as follows: Chauncey Beach, 1821: William Buell, 1823; T. W. H. Leavitt, 1875; Thos. Southworth, 1881; Hon. George Graham, 1895. The latter is still editor.

Messrs. Warwick Bros. & Rutter, wholesale and manufacturing stationers, King Street W. Toronto, have placed another traveller in the western Canadian territory in the person of Mr. Reg. Booth. Mr. Booth has been many years with the company and also spent three years in the Winnipeg office. He will take care of the middle west with headquarters at Winnipeg where Mr. E. Hazen is in charge. The placing of another western traveller was made necessary by the increasing demand for the firm's lines in the middle west.

An excellent "house organ" is the Christmas number of the Spanish River News, the Employees' paper, published at Sault Ste. Marie, Ont., by the Spanish River Pulp and Paper Mills, Limited, constituting as it does a splendid example in which the good-will appropriate to the season may be spread throughout an organization. The cover shows a writing pad on which lies a letter conveying Christmas wishes from the president. Mr. G. H. Mead, to all the company's employees. Letters from other officers are featured on various pages, while others carry photographs depicting various events of the year in connection with the company's operations. The paper is well-gotten up and is done in colors.

Mr. Justice Orde, at Toronto, has allowed the appeal of the Attorney-General from the order of the Master in Chambers, who refused to strike out certain paragraphs of the statement of defence in the action against W. H. Russell and the Russell Timber Co., Ltd., of Port Arthur. The Attorney-General sued for the cancellation of timber licenses, which it is alleged, were improperly obtained by the defendants and for damages for the wrongful cutting of pulpwood. The defendants, in counter-claim, alleged that the Attorney-General was using the action to harass them in their business, and that the action was brought for ulterior purposes. They asked leave to claim $100,000 damages. The paragraphs as to the alleged wrongful use of the action are ordered to be struck out and the defendants are directed to pay the costs of the motions.

UNITED STATES NOTES

Indications that an early resumption of activities in the industry may be looked for are seen in reports of improving business coming from various parts of the country. Leading paper men in most of the big centres show a disposition to view the situation hopefully and many of them confidently predict that a definite turn in the tide of business is due within the next few weeks. There has been no further suspension of operations, at least not to any marked degree, and a few of the plants which were shut down due to the usual holiday depression have made mid-January announcements of their intention to resume part time operations for the present. No fewer than a dozen plants in the Miami Valley, Ohio, are now running on part time following the holiday layoff and most of these are expected to be running full time in the near future as orders are understood to be growing enough to justify greater productive activities. New York, Philadelphia, New England and Mid-Western paper men generally express optimistic views as regards the outlook for better business in the immediate future. Only in from one quarter is there a tendency to view the situation otherwise and that is in St. Louis where some are inclined to believe that it will be months before any noticeable increase in business will prevail. They say that the outlook for the weeks just ahead is anything but promising because conditions in general are in a bad way.

R. N. Adair has been given charge by the Diem & Wing Paper Company of a new branch recently opened in Indianapolis, Ind. Mr. Adair will look after the firm's business in Indianapolis and adjacent territory. The big Cincinnati paper jobbing house now has branches in Columbus, Louisville, Birmingham, New Orleans and Indianapolis.

In a bulletin recently published by the State College of Forestry, Syracuse, N.Y., Prof. Edward F. McCarthy, of the department of forest utilization and Prof. H. C. Belyea, of the forest engineering department, give the results of an extensive study of forestry conditions in the New York State. The study, carried on for many months in the Adirondack Forest by the compilers of the work and a party of assistants, had for its main purpose experimentation with a rapidly growing tree species. The yellow birch came in for the most attention, and its utilization for the paper industry was studied in detail. The findings contained in the bulletin, which is issued under the title, "Yellow Birch and its Relation to the Adirondack Forest," should be of immense interest to the forest profession because it is probably the most exhaustive study of yellow birch growth and forest conditions ever made.

Work on the big new dam built at Chateauguay Lake as an adjunct to the High Falls Pulp and Paper Company has been completed. This dam, constructed at a cost of about $90,000, replaces an old structure which had outlived its usefulness as a river regulating medium. The High Falls Company is controlled by the New York World, which it supplies with newsprint. The daily output of this plant is about 60,000 pounds.

Logging operations in Main are likely to be greatly curtailed this winter owing to the uncertainty as to the future in the lumber market. Several concerns in the pulpwood business are on the point of quitting altogether. One pulpwood firm that has extensive land holdings in Nova Scotia has decided not to cut a stick this winter and its manager has returned to Bangor. "Everyone is up in the air on the pulpwood market," says this manager, "and no one can guess what is going to happen next. There seems to be a concerted effort on the part of the paper manufacturers to drive down prices on pulp, which, of course, would mean lower prices for wood. Those of us who have been getting out pulpwood for the market have not noticed any marked reduction in the price of paper and until that drop takes place, the pulpwood men will sit tight and await developments.

Officials, superintendents and district sales managers of the American Writing Paper Company, met recently at a three day conference in the company's offices at Holyoke, Mass., for a general discussion of sales conditions. Sales representatives from branches in all parts of the country were on hand. President George A. Galliver; Vice President, R. R. Campbell; Herman Harrington, production engineer; M. L. Cramer, of the puchasing department; Dr. Rindfusz of the technical control department and others addressed the several meetings.

The Bowdoin paper mill of the Pejepscot Paper Company was shut down for a week, beginning January 10, owing to a lack of orders.

The Albany "Argus," established in 1813, oldest newspaper in New York State, published its last daily issue recently prior to being merged with the "Knickerbocker Press," whose owners came into control of the "Argus" through purchase.

FIRST MEETING OF THE CELLULOSE SECTION.

At the Cellulose Symposium held by the Industrial Division of the American Chemical Society at the meeting in Chicago last September, it was voted to form a permanent Cellulose Section. Following the meeting the necessary steps for organization were taken, and President Noyes appointed Professor Harold Hibbert of Yale University, Chairman of the new section with Gustavus J. Esselen, Jr., Secretary. One of the objects of the section is to provide an opportunity for those interested in the practical application of cellulose to get together with those concerned with the more strictly scientific aspects of cellulose chemistry and to afford an opportunity for discussion which should prove mutually helpful.

An interesting program is being arranged for the first meeting of the new section in connection with the meeting of the American Chemical Society in Rochester, New York, beginning April 26th. Those having papers which they would like to present before the section are requested to send title and abstract before April first to the secretary, who may be addressed care Arthur D. Little, Inc., 30 Charles River Road, Cambridge, 39, Massachusetts.

G. J. ESSELEN, Jr.,
Secretary.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, Jan. 13. — Conditions in the Canadian paper trade are still somewhat unsettled and buying is light owing to the general belief that the bottom in price reductions has not yet been touched. It is claimed in some quarters that the trade is suffering in consequence of these unsettled conditions and the conviction is freely expressed that business will not be speeded up to a satisfactory point until paper merchants and manufacturers respond to the falling market. It is known that manufacturers of some lines of paper are hesitating to scrape the bottom of the price level in view of the heavy overhead and the increased cost of some lines of raw stock, but many experts in the trade declare that if prices are to be still further lowered it should be done at once in order to get back to normal conditions and accelerate buying. In other words, rock bottom should be reached at once, based on manufacturing costs and a fair profit, and if the trade will stand any further reduction, there should be no delay in putting it into effect, for in the paper trade, as in other lines of commerce, a falling market is not calculated to stimulate buying but rather the reverse. There is no great complaint by either manufacturers or jobbers as to the volume of business being done, although, of course there has been a big falling off. But making allowance for the prevailing period of depression in trade circles generally the pulp and paper field is keeping up fairly well and what losses of business that are being experienced are being taken philosophically and in the belief that buying on a fairly large scale will shortly be resumed. In some lines of paper a distinct improvement in sales has been noted.

BOOK PAPERS.—Book paper mills are busy readjusting their prices and some of the mills have already issued new lists based on the lowering trend of papers generally. Book papers are already being sold at reduced prices but these prices are said to be of a temporary character and will be until all the mills come into line. The readjustment at present being made applies to book papers, bonds, ledgers and fine papers generally and while jobbers are selling on the basis of the lowered prices, the new schedule will not be ready until next week. Several of the jobbers report a picking up of trade conditions in fine papers and say that some lines are moving considerably more freely than during last month. Good business is looked for when prices become stabilized. While the coming new price list will be the result of a downward revision, it is said that each line of paper will have to stand on its own footing and that while most lines will be reduced there may be some lines that may have to be increased in price. In each case, however, there will be an adherence to the principle of fixing the mill price in accordance with the cost of raw stock and labor. It is generally understood, however, that when the prices of fine papers are finally and uniformly fixed there will be no further reductions until labor and raw materials take a further drop. Just now some of the raw stock is higher than ever, although the various lines of pulp are down.

KRAFT.—The kraft mills report a fair quantity of business, comprised of small orders, but the days of big business appear to have passed, temporarily at least. There has been a slight revival but both mills and jobbers could handle a good deal more business than they are getting. The general situation in the kraft and wrapping paper fields will be canvassed at a meeting of manufacturers to be held in Montreal on Jan. 19. In the meantime kraft is selling at the reduced price of 11½c and kraft pulp at $125 a ton.

COATED PAPER.—Coated paper mills report that while they have had to contend against a few cancellations there are very few coming through now. The depression in the paper trade has not touched them to any great extent. They are still working on back orders and say that they are still unable to get enough paper from the paper mills. The coating mills are still short of m. f. paper and say that they are not receiving enough from the paper mills to meet their requirements.

WRAPPING PAPERS.—Jobbers report that a fair volume of business was done during January and the present month is opening up well with small orders but no big lots of wrapping or bags are being sold. The recent reduction in prices has stimulated buying somewhat but not to any great extent as yet. The trade is looking forward to a revival of business within the next few weeks.

TISSUES AND TOILETS.—There is a fairly good demand for both these lines and the mills report that they are fairly busy filling orders of small dimensions business and have not yet been called upon to make stock for future trade. While there has been a big falling off in business the past week has shown a considerable improvement in sales, which the mills do not attribute to the recent price reductions but to a healthier state of the trade generally.

MANUFACTURING STATIONERY. — Wholesale and manufacturing stationery houses appear to have been but little affected by the present lull in the paper trade industry. One big Toronto firm put on an extra commercial traveller in the western territory this week in response to the demand for blank books and stationery in the middle west. Business is reported to be satisfactory and consumers will shortly get the benefit of reductions on the prices of raw material such as bonds, ledgers, book paper and news. Scribbling books have already been reduced, manufacturers now paying 7c for flat news as against 10c a short time ago. Other lines of manufactured stationary will shortly be reduced, it is understood. The trade generally appears to be in a healthy condition.

BOX BOARD.—Further reductions in the prices of several lines of box board went into effect this week, following the general reductions announced about three weeks ago. Plain chip is reduced from $80 to $60 a ton; plain straw board is reduced from $80 to $60 and vat-lined chip board is down from $90 to $75. These prices are subject to change without notice. The trade reports business dull and sales somewhat meagre.

PULPWOOD.—Enquiry among the dealers in pulpwood reveals a prevalent belief that next years prices for wood, which will not be fixed until May or June, will show a ten or fifteen per cent reduction as compared with the current year's prices. Practically all of the cut has been sold in Ontario but there is said to be quite a quantity in Quebec that is still unsold.

PULP.—None of the paper mills are experiencing any difficulty in getting pulp supplies now and the market is reported as being somewhat dull. Some of the mills are closed down and others are contemplating repairs which will be undertaken during the present quiet period. Strong sulphite is now obtainable at $140 and news sulphite at $100. Bleached sulphite is quoted at $165 and ground wood is available at $95.

RAG AND PAPER STOCKS.—The week saw a slight decline in some grades of new cotton cuttings, and the outlet to consuming mills has not widened as yet. The price list has therefore gained little in firmness of what values on the various grades are. Some of the paper manufacturers have resumed, or increased operations after the holiday shut-down, but there has been no increase in business except, perhaps, in enquiries. Dealers report that producing sources are still generally shut down, and are putting out a very small proportion of the usual production. Old cotton rags have shown a decrease in price, although there seems to be a considerable firmer tone to the market. This has been due, not to demands from the mills, but rather it has been accounted for by the fact that there are comparatively few rags on the market, and holders are not offering anything at sacrifice prices. Some of the high grades of paper stock have fallen off quite sharply in price, and there has been very little business in waste paper. White blanks and No. 1 manila cuttings and kraft have declined perceptibly since the last quotation, while mixed and newspapers are moving in small volume at the same prices. Nearly all the mills are buying from hand to mouth and any orders placed are for small quantities only. Books continue firm and the mills are absorbing a fair tonnage regularly.

	Per Cwt. F.O.B. Toronto
No. 1 shirt cuttings	$18.00—$19.00
No. 1 unbleached cotton cuttings	11.50— 12.00
No. 1 fancy shirt cuttings	9.00— 9.50
No. 1 blue overall cuttings	8.00— 9.00
Bleached shoe clip	11.00— 12.00
White cotton hosiery cuttings	14.00— 15.00
Light colored hosiery cuttings	11.00— 12.50
New light flanellette cuttings	11.50— 12.00
No. 2 white shirt cuttings	8.50— 9.00
City thirds and blues (repacked)	1.90— 2.00
Flocks and satinettes	.80— .90
Tailor rags	.60— .70
Gunny bagging	1.10— 1.20
Manila rope	3.75— 4.00
No. 1 white envelope cuttings	6.75— 7.00
No. 1 soft white shavings	6.00— 6.50
White blanks	2.75— 3.00
Heavy ledger stock	3.50— 3.75
No. 1 magazine	1.90— 2.00
No. 1 book stock	1.75— 1.80
No. 1 manila cuttings	2.75— 3.00
No. 1 print manila	.75— 1.00
Folded news	.75— .80
Over issue, news	1.30— 1.40
Kraft	2.75— 3.00
No. 1 clean and mixed papers	.30— .40

NEW YORK MARKETS.

New York, January 15—(Special Correspondence)—The paper market has developed no new feature of importance. Demand is still of limited scope, consumers with very few exceptions confining their buying to supplies directly required, with the most encouraging element being that of increased inquiry. Large users of paper are placing contracts covering future needs without seeming reluctance and are meeting the prices asked by manufacturers, and buyers in general are exhibiting more interest although spot demand is very nearly of the same nature and compass as it was when the new year was ushered in.

Prices have undergone little fluctuation. Manufacturers are holding firmly to quotations and appear satisfied not to get orders unless their basis of price is met. Jobbers in turn are not lowering prices any further, claiming that they are unable to acquire fresh supplies from mills at any recession in cost. The price tone therefore is steady, and, and it would certainly appear that paper prices have about touched bottom for a time.

Mills which closed down during the holiday season are gradually resuming operations. Reports from book paper mill centres say that this class of paper manufacturers are obtaining enough business to keep them running at close to full production, and there has been no let up in activities among newsprint mills. The demand for newsprint is of sufficient volume to absorb practically all the output of mills, and it is understood that a good many mills have disposed of virtually their entire 1921 production to contract customers. Prices on newsprint hold at between 7 and 7.50 cents a pound to transient buyers and around 6.50 cents on contract. Occasional shipments of fairly large tonnage are being received from European sources, as for example, a shipment of 6,416 rolls arrived at New York this week from Finland, but such supplies have no apparent influence on the domestic market. In fact, if anything, receipts of imported newsprint have dwindled during recent weeks.

Book papers rule quotably steady at around 12 cents a pound for machine finished book, 13 to 14 cents for supercalendered, and 15 cents on coated book. There are few offerings of sizable quantities of book papers being made. One reason for this is that the average book paper mill has the great bulk of its output sold for sometime ahead and is not particularly desirous of disposing of the surplus it still has to sell, presumably figuring that better prices can be obtained later on in the open market.

Tissue papers are comparatively quiet. With the pre-holiday trade a thing of the past, consumers are generally holding off in buying, and manufacturers as a usual thing are looking for orders. Prices nevertheless hold steady at $1.80 upward to $2 on No. 1 white tissue, and in the neighborhood of $1.75 on No. 2 white and No. 1 manila tissue. Wrapping papers also are in a quiet market condition, there being but a routine demand. Fine papers are moving relatively good volume and at steady quotations. It is quite apparent that demand for writing papers is running chiefly toward the lower qualities but in the aggregate there is moderate activity in the market.

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INQUIRIES SOLICITED

Boards are sought by consumers in limited amounts and yet the market appears to be strengthening, even if only sentimentally. No further reductions have been reported made in prices, and manufacturers almost as a unit are becoming increasingly insistent on the figures quoted, which range around $50 per ton at mills for filled news board and $45 for plain chip board. A feature of the board market is that fairly large quantities of strawboard are arriving in this country from Germany.

GROUND WOOD.—The tone of the mechanical wood pulp market is steady and a moderate trade is reported current. Consumers continue to operate cautiously as buyers, generally absorbing only such supplies as are actually and immediately required, and yet mill agents and dealers tell of marketing quite a lot of pulp. Every indication would seem to point to the situation growing more active although the change is slow. Prices hold at between $95 and $100 a ton at grinding plants for domestic pulp of prime quality for prompt delivery and from $85 to $90 for imported ground wood.

CHEMICAL PULP.—A fairly good routine business is passing in chemical wood pulp, and while the market still lacks the life and snap of busier periods, there is sufficient doing to well maintain values, with the tendency of quotations distinctly upward. Everyone on the selling end of the pulp trade seems bullishly inclined. It is felt that when paper mills begin to experience more activity in their own product and resume buying pulp on a more normal scale that there is every probability a near-scarcity of pulp will develop, thus making for higher prices. Those producers and dealers having unsold stocks of pulp on hand consequently are not exerting undue efforts to unload these supplies, but are content to hold them for a while. There is therefore very little selling pressure and buyers in want of pulp invariably find it necessary to pay the prices asked.

No change in quotations of note has occurred. Domestic bleached sulphite is priced at 7.50 to 8 cents per pound at pulp mills, domestic easy bleaching sulphite at around 7 cents, news grade sulphite at 5.75 cents and domestic kraft of No. 1 quality at 5 to 5.25 cents.

Receipts of foreign pulp at the port of New York this week included 11,700 bales from Hernosand and 12,956 bales from West Hartlepool.

RAGS.—Demand for papermaking rags has been a little livelier during the present week. Consuming mills have continued to refrain from placing orders for large tonnage, but small-lot sales have been of greater number and there has been increased inquiry. The tone of the market is steadily firming. As an example, dealers who a few days ago were freely accepting orders for No. 2 roofing rags at 85 to 90 cents per hundred pounds at shipping points have this week turned down further orders at the same basis, it being their contention that they cannot secure rags at same prices from packers. No actual advance has been scored in prices, mainly for the reason that mills have refused to pay more, and yet it is becoming more difficult for buyers to secure supplies at the basis at which they recently have purchased.

Old white rags are especially firm. Dealers ask 7 cents and more for No. 1 miscellaneous packing of whites and around 9 cents for No. 1 repacked, while house soiled whites are held for 3 cents and higher and street soiled whites at 2.50 cents. Thirds and blues, on the other hand, can be bought at relatively cheaper figures, repacked thirds being offered by dealers at 3 to 3.25 cents and miscellaneous packing at 2.25 to 2.50 cents. New cuttings are quotably steady.

PAPER STOCK.—The paper stock market has exhibited signs of increased activity. Board mills located near to New York have been more actively in view as buyers of the low grades, and sizable amounts of folded newspapers have been moved at 60 to 70 cents per hundred pounds and of No. 1 mixed papers at 40 to 45 cents a hundred. White blank news cuttings meet with a ready sale at around 2.75 cents a pound at shipping points, and a better demand is reported for magazines, which command in the neighborhood of 1.50 to 1.60 cents from mills for No. 1 heavy books and magazines. There is still a lack of interest evinced in shavings and quotations are nominally around 5.50 cents per pound for No. 1 hard white and 4.50 cents for No. 1 soft white shavings.

OLD ROPE AND BAGGING.—Paper manufacturers are mostly neglecting offerings of old rope are nominally around 5.50 cents per pound for No. tely established price basis. Around 4.50 cents a pound is asked by sellers for No. 1 manila rope and 1.75 to 2 cents for No. 1 scrap bagging, with the probabilities in favor of buyers obtaining some supplies at lower levels. Gunny is easy and offered at 2 cents and less.

An awful lot of energy is used in hating people who don't care whether you do or not. — Making Paper.

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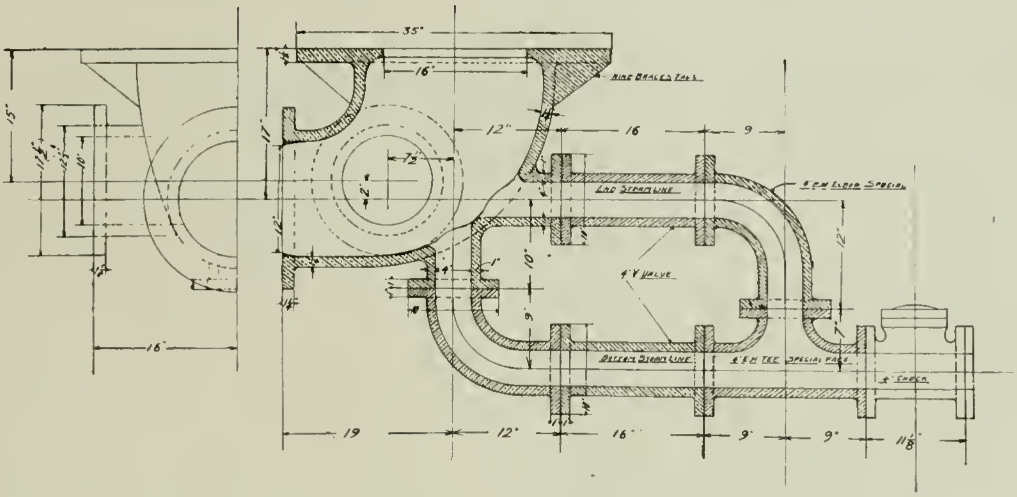

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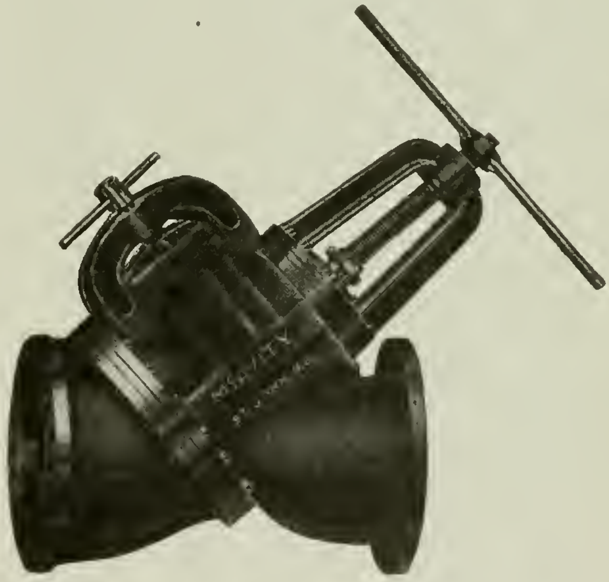

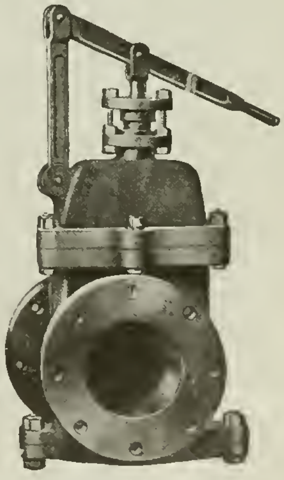

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SLASHER SAWS.

What is the best guard for slasher saws? The best that I can offer would be to take them out of the mill altogether, but that, at the present time, is almost an impossibility. Therefore, we must give our attention to the best method of safeguarding this dangerous operation. In my inspection of saw mills in several States, I have found that a large percentage of the slasher saws are not protected. These saws should have a guard placed in front of them. Not only is there danger of a man falling on these saws, but if one of these saws should break, which every sawmill man knows happens quite frequently, and any part of it strike a workman, the result would be hard to describe. A guard can be easily applied, and can be made of wood, pipe or strap iron. The cost of this guard is very small, and even though it cost hundreds of dollars, could you compare that with a HUMAN LIFE? Many sawmill foremen, and even managers, have made the statement that they did not think there was any great amount of danger with these saws exposed, and furthermore. if a man did get hurt back there, it usually was a man that did not belong there. It does not make any difference if he belonged there or not — a human life is a human life, and it is the duty of every man who has the authority to do his utmost in safeguarding his men. However, these foremen and managers did admit that there was a POSSIBILITY of a man receiving a serious injury. So if there is a possibility, then it should be guarded, for that is what we are working on—POSSIBILITIES AND FACTS. We cannot say that a man is sure to get hurt on a certain dangerous point, but we can say that there is a possibility, or that a man once received an injury there and there is a POSSIBILITY of some other workman receiving an injury from the same cause.

Some time ago I was making an inspection of a sawmill, and in this particular mill the slasher saws were not protected, except the saws on each outer end. The foreman and I were discussing the protection of these saws, and he claimed he thought that the outer saws being guarded gave all the protection that was necessary, owing to the fact that there were two men working near each end of the saws and no one else had any business getting near the saws in the middle. However, we had not quite completed our discussion of the question when a negro laborer, who was at work on the stripping table behind the resaws, jumped down from his place of duty (he was going to get a drink of water), and as he jumped down in front of these slasher saws he slipped, and both of us fully expected to see him meet his death in a most horrible manner, but by a miracle he stopped within an inch of space. Is this not enough to make any broad-minded man see what a dangerous operation these saws are and that he has failed to do his duty if he has not given this operation the proper protection? Now, if this man had met his death, where could we have placed the blame? Could you truthfully state that this workman was careless? Could you say, with a clear conscience, that you gave that man protection? It is true that jumping down from that platform was an act of carelessness on the workman's part, but again I ask, could you not provide a way that a man could have gotten down without jumping? Perhaps you could have installed a pair of steps which would have reduced that hazardous condition.

So I sincerely hope that every mill that has slasher saws will give this dangerous operation their immediate consideration. Do something to eliminate that POSSIBILITY of a man falling on the saws, or a man receiving an injury from the flying bits of a broken saw. It is your duty—you owe it to your men, and to the community in which you operate.

With a little effort, a few nails, bolts and some lumber, you CAN ELIMINATE THE POSSIBILITY of injury from these saws.—C.A.M., In Common Sense.

WASTE MATTER.

There is a story that a very large and beautiful piece of marble was ruined by a second-rate sculptor in trying to carve a statue, and lay for years abandoned in Florence. The way it had been cut into made it seem utterly useless. But Michael Angelo looked at it, and saw in it the superb David which ranks as one of his masterpieces. His vision and chisel released the beauty which the duller man had not even dreamed of.

We are only now beginning to understand the value of what we have been calling waste matter. The stockyards have known it for many years; and coal by-products have long been the basis of many large and profitable industries, but most of us have been content to take the cream and let the skimmed milk go. There were the "inexhaustible" forests. A friend of ours, as a young man, "cleared" some woodland by deadening all the trees on a fifty acre tract, and burning much of it. Some 200 sycamore trees, each several feet in diameter, went into one bonfire. That was forty years ago, but such trees took much more than forty years to grow. If in the forestry situation "the fathers have eaten sour grapes and the children's teeth are set on edge," there is now, at last, an effort to avoid such destruction in the future.

The remedial measures are two; the slow one of scientific reforestation, as practiced in some parts of Europe; and the quicker method of making fuller use of material. It used to be that pulpwood yielded only cellulose, and the other 65% of the pulp-wood's value "went down the river." To-day, with the high cost of raw material, certain paper mills have developed methods which save nearly all of it, and the paper mill of the future will be also a factory making chemicals for various other industries.

Increased wealth and comfort to an increasing population are conditional upon an ever increasing utilization of waste material. Manhattan barely supported a few hundred natives without even the most elementary comforts. What they wasted was enough to support a great city, and to-day some five million odd people get their living from that same island.

Paper was in its very origin a waste trade, and printing grew out of an attempt to cut out wasteful duplication of effort. In both trades there is room for further advance along the same line. While much of this work must be done by the large manufactories with their research chemists and designing engineers, every one of us can help a little.

One of the easiest ways is to save, bale and sell old rags, and old papers. An inexpensive little baling press is all the equipment needed, and while the cockles of our heart are warmed by a virtuous feeling that we are helping to conserve, your pocket book has that satisfied feeling that comes from getting extra money. —IT PAYS.—"The Caravel."

Excess is an arch enemy of success.—Forbes Magazine.

Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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Official Journal of the Technical Section of the Canadian Pulp and Paper Association.

J. NEWELL STEPHENSON, M.S., Editor.

The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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-:- EDITORIAL -:-

GETTING BIGGER AND BETTER.

The important place which the Pulp and Paper Industry holds in Canada's industrial life becomes more evident each year as the annual convention brings together the leaders of the industry. It is gratifying of course, to have men like Sir Henry Drayton, Minister of Finance for the Dominion of Canada and the Hon. Walter Mitchell, Treasurer of the Province of Quebec, emphasize the position held by our industry, but the consciousness of magnitude and of the greatness of opportunity is felt, rather than heard by one who attends the annual conventions of the Canadian Pulp and Paper Association.

Merely to recite the number of mills, the tonnage of the value of the output, the number of square miles of timber lands controlled, the number of employees or the size of the pay roll does not adequately describe the place which this industry must fill in the industrial life of the Dominion. It is rather the opportunity for doing than the record of accomplishment which should claim our attention. There is a greater obligation and a more important function than simply to make paper, pulp and profits. Profit of course, is the incentive for organization and production supplies the means for making it, but Sir Henry Drayton did well to mention in such emphatic manner at the banquet of the association, the obligation of the papermaker, along with other employers of labor, to relieve each employee of the fear of worklessness. He was quite right in referring to this as being the greatest fear in the mind of every worker.

There is of course, a mutual obligation in this respect and an excellent instance was given by a gentleman from a small town in New York State where a small paper mill is operated. Nearby is a large city and during the war the paper mill employees could have easily gone to the city at several times the wage they were receiving. Nearly every man and girl stuck by their jobs and now that times are a bit slack this employer is standing just as firmly by his employees and they are now in no fear of being out of work. To maintain an organization even at the expense of a portion of the profits is not altogether philanthropy; it is simple justice where the employee has recognised his own responsibility in working steadily and faithfully. On the part of the employer it means maintaining an organization many whom are skilled workmen and of whom all are familiar with his particular proposition.

As Sir Henry remarked in his speech, the paper industry in Canada is sure to extend and in doing so there comes a still greater opportunity for the employment of Canadian labor and there remains the obligation to supply the home market and to support the Government.

As was intimated several times during the convention, the pulp and paper industry is continually becoming a greater force in the Dominion. Under the guidance of the newly elected officers, there is no fear but that as far as the Canadian Pulp and Paper Association is concerned, the industry will continue to exert this power to bring the greatest good to the greatest number.

COOPERATION IN RESEARCH.

One of the most important subjects of discussion at the annual meeting last week of the Canadian Pulp and Paper Association was the matter of organizing for research, a special department of the association's work and the appropriation of a suitable fund for the proper carrying out of such a program. The matter has been thoroughly studied since last July by a special committee of representatives from the Technical Section and the main Association so as to bring to bear on the problem the thought and experience both of the technical man and the director of business enterprises. It has been realised, and this point emphasized in a report of the committee, that a research department is just now mostly a matter of organization. It really requires organized cooperation. The association readily and speedily voted the necessary funds and in doing so the responsible heads of our companies who gave their unanimous approval to the report of the committee thereby place themselves under obligation and should consider that they have pledged themselves not only to pay their share of the expense, but to render other assistance and encouragement to the new department and the director who shall be selected. In fact, there seems to be no question but that the success of this new line of action depends as much, if not more, upon active cooperation than upon sending cheques to the secretary.

The various committees of the Technical Section have in the work they have accomplished, frequently, perhaps usually, been able to perform their duties because of some degree of cooperation from other members. Oftentimes efficient cooperation has been practically impossible because of the difficulties of doing so by mail and without personal conferences and continual contact. An instance of this is the work recently done on two of the more important types of alloys used in the mills. The committee on Mechanical Standards found it practically impossible to get useful information either to confirm their findings or to guide them in their investigations because about 90 per cent of the mills either did not have accurate information or were unwilling to share what they did have. The committee felt it was largely the former condition but there may have been a little of both. With a Director of Research, the duties of Technical Section committees should be much less arduous and much more effective. In such a case as has been mentioned, a director, knowing the information desired by a committee, would be able to pick up points here and there and to encourage work in various mills where assistance could be conveniently given so as to approach all sides of a problem with little or no duplication of effort and thus provide each one in the industry with a complete piece of work to which each had contributed a share in proportion to his position and ability.

All members of course, would not be able to assist on every problem nor would such be desirable but in the course of a few years each mill and member would be able to contribute something to the whole work of making our industry more stable, more progressive and more effective.

Someone at the convention asked the editor if the new research department would not soon replace or render unnecessary, the Technical Section. Nothing seems more improbable. As we see it, the Director of Research who will be in charge of this department, will be able to coordinate in an effective manner, the odds and ends of investigations that are undertaken here and there and he will be able by distributing various phases of a large problem among several members, thereby obtain a much speedier solution than would be possible by the single efforts of one individual or laboratory. An example is before the Committee of Mechanical Standards at the present time in the problem of investigating the resistants to the flow of pulp in pipes. The committee first realised the difficulty of a suitable instrument for measuring pressures and velocities. The members of the committee have been working on this phase which, it seems to us, could have been more effectively attacked had there been a central staff and particularly if there had been in existence the National Research Institute which will probably be established during the current year. Having gotten such an instrument there will then come the necessity for investigating typical mill conditions. It is hardly possible that any one mill could supply opportunities for making tests with many different lengths, sizes, kinds and conditions of pipe or with all varieties and concentrations of stock, but a Research Director could make use of such conditions as do exist and thereby distribute expense and eliminate duplication and create an interest in research work.

On casually reviewing the field and its opportunities, it seems to us that a Research Director will save his salary to the association by cutting out duplication of effort and expense by relieving mill managers of much of the detail that they have had to attend to, to say nothing of increased benefit to the industry from the greater effectiveness of properly coordinated effort.

COBWEBS.

One of the pleasantest experience the editor has enjoyed for a long time, was when Mr. George Carruthers, chairman of the Joint Committee on Vocational Education, presented him with the first copy of volume one of the Textbook on the Manufacture of Pulp and Paper. The preparation of these books has been one of the principal concerns of the editor for the past two years. The secretary brought this volume from New York where it was obtained from the bindery but a few hours before train time. The publishers certainly exerted themselves to deliver a sample copy in time for the meeting. It is expected that copies of volume one which contains the necessary preliminary subjects of Mathematics, Reading of Drawings, and Elementary Physics, will soon be available to the public. An announcement will be made to this effect in the journals of the industry.

For some unaccountable reason, several of the Montreal papers referred to the convention of the Pulp and Paper Association as a meeting of foresters. This is partly right but the term is hardly comprehensive enough to cover the whole industry.

The head table at the luncheon of the Canadian Pulp and Paper Association had quite a military appearance. There were General Sir Arthur Currie, General J. B. White, Col. W. E. Haskell, Col. George Chahoon, Col. Sir William Price, Major Percy B. Wilson, and George McKee, whom we shall call a captain of industry.

The Pulp and Paper Magazine, congratulates Mr. Percy B. Wilson and Mr. Geo. M. McKee on their election to the positions of President and Vice-President of the Canadian Pulp and Paper Association and compliments the Association on its choice. The services of the Magazine are always available to them.

In welcoming the new officers we would not overlook our debt to those who have so ably piloted the industry through the past year, Mr. Geo. Chahoon and Mr. Howard Wilson.

If you see a workman doing something carelessly, make it your business to tell him about it. Let him get sore. You have done him a favor, and when he gets over his sore spell he'll thank you. Try it some time.

The University and Industry

By General Sir Arthur Currie, K.C.M.G., Principal of McGill University.

In introducing the speaker of the day, Mr. Percy B. Wilson, the newly elected president of Canadian Pulp and Paper Association, said:—

This is the first occasion I have had to address you, and I am very glad to be in such excellent company. Looking around me, I think you will agree with me that I am in that position.

We have with us today a gentleman whose words we often awaited in the past with unrest. We awaited them with anxiety and when they came we received them with pride, because they told of the doings of the Canadian Corps.

Now, I believe, that while Sir Arthur Currie, our principal guest today, has relinquished his duties as the Canadian Corps' commander, we will receive what he has to say to us today with just as great a welcome as we did what he said to us in the past.

He is now engaged with the great McGill University and as Principal of that Institution, he is bringing forward men who are going to work in our industry in the future. The few talks I have had with Sir Arthur have led me to the conclusion that he looks at this research question just as we all do here, and he wants to give a special and practical light on that question in the University.

Gentlemen, I have the greatest pleasure in the world in introducing to you Sir Arthur Currie. (Prolonged applause).

The Address of Gen. Sir Arthur Currie, K.C.M.G.

I thank you very much indeed for your kind and cordial and flattering welcome, and I hope that in the few remarks I intend to address to you there may be found something that will repay you for the honour you have done me in permitting me to address such an influential gathering.

I thank you, Mr. Chairman, for your kind words of introduction, and may I take this opportunity of extending to you personally my congratulations for the high position to which your associates have elected you.

I know this is not the first occasion this Association has met in the city of Montreal, and I hope it will not be the last. My old friend, Tom Gibson, tells me that Montreal is not such a bad sort of a place for a convention of this kind to hold their meetings.

I also hope, gentlemen, that you will take such action as will lead to this result: and that is, that the dividends that we poor shareholders receive in the future will not be any less, and if there is a tendency on the part of any stock to droop unnecessarily in the market that you will warn us, so we will not lose too much of our money, because we have not very much to lose.

I wanted to speak to you today on the subject of "The University and Industry."

These two words suggest to us two words: very different and very distinct. On the one side, you have the world of inspiration, ideals, thoughts, visions, motives, and on the other side you have the world of method, machines, facts, deeds, action. They are usually as widely separated in our minds as the earth and the sky; but in reality they are the two halves of existence, as no life can be complete or perfect which does not combine them into a beautiful and profitable harmony. Here you have the University, that home of purpose and standards, the nursery of ideas, dreams, inspirations; and here you have industry, the arena of practical things, the place of action, work, diligence, facts. The highest welfare of society demands that we bring the two together. They were intended for each other. Neither can achieve its full purpose without the other. The University alone is only half-life; Industry alone is imperfect and incomplete.

PERCY B. WILSON, President, Canadian Pulp and Paper Association.

The problem of our time is how to bring them into closer and more effective relations in order that the best interests of humanity may be served. It will perhaps assist us to see the question more clearly, if we narrow our view down to the individual.

After all, the nation, society, or the community, is only an aggregate of individuals, and if we can bring the worlds of motives and of methods to cooperate in a single life, we shall have solved the social problems. There are, perhaps, three kinds of men in this work-a-day world. The first is the man of theory and visions: the man of thought and aspirations. He has a mind well developed and trained; stored with all the finest ideals and thoughts. He has a ready remedy for all the ills of life, but his standards and lofty conceptions are never transferred into action. He never does a really useful thing. He is all theory, but when it comes to practical work he is useless.

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*Address delivered at the luncheon of the Canadian Pulp and Paper Association, held at the Ritz Carlton Hotel, Montreal, P.Q., January Twenty-First, Nineteen Hundred and Twenty-One.

Do we now know him? Is not every town or city burdened with these dreamers and theorists? Very frequently they are college men, bearing after their names a multitude of letters. The throbbing world of work is full of scorn for him. He is filled with "wise saws and modern instances," but he is utterly hopeless when assigned to a day's task.

Then there is the second man: the person who is all activity. He "does" things, while the other man is thinking about them. He dreads vagueness. He hates sentimentality. The important matter to him is that the thing should be done. What matters motive, tall talk, gush, enthusiasm?

If a railway is to be built—why, build it. He does not care whether he corrupts a whole Province in doing so. If an asylum is to be founded—why found it. You may or may not have the men to fill it, but the great need is to get it opened. He makes industry intense. Work is to be done, machines are set running, resources are developed, and the world just hums with action as he flies from task to task.

Do we not also know this man? And have we not learned that there is something lacking in his practicability, noble and effective as it is? Have we not seen that quantity has often been achieved at the sacrifice of quality? That results have been obtained without sufficient regard to their character? That work has been done of a temporary nature, not having the permanence that we all desire to see?

So we come to consider the third kind of man. He is the man who combines theory and fact who fills his work with noble inspirations, whose methods are irradiated with high motives, whose lofty thought is translated into splendid action. He is the educated man who finds expression for his ideas in the throbbing world of industry. Surely this is the kind of a man that the world needs today. He never has a high thought without instantly seeking to send it forth into its fitting action. He never undertakes a duty without struggling to set behind it its profoundest motive. He brings to bear upon the problems of society and industry a knowledge of history; upon the rich resources of nature; the truths of science; upon the tasks of life, the inspiration and ideals of experience. In him are combined the two worlds—the discordant parts are blended into a glorious harmony. He draws together the University and Industry.

When one pauses to think about it, these two great factors of life ought to be constantly related. For what does the word "University" signify? It has an inclusive sound. Originally it was intended to cover all the colleges of whatever branch of learning. May we not interpret it now as comprehending every system or institution where education plays a part?

The University can never be partial. That would be a contradiction of its very name. It must be wide enough to encompass the whole world of ideas or action. In brief, it must be universal, all-inclusive in its scope and purpose. It must manifest an interest in men of every class and condition, and seek to develop them into their very best. It must enlarge its borders until the son of the laborer has an equal opportunity with the son of wealth and affluence. Whatever gifts it has must be held in trust for all men, and there can be no satisfaction until it has extended its influence and helpfulness to every grade of society.

The word "Industry" has a like catholic significance. Too often we have confined it to a certain type of work. The industrious men are discovered in all the departments of human activities. Industry reaches every phase of society—it affects very seriously all the relations of life up into water-tight compartments. Every department bears in greater or lesser degree upon every other, and our task must be to create and maintain harmony among the too-often discordant elements in our humanity.

We cannot close our eyes to the fact that the prevailing discord springs largely from ignorance. Misunderstanding is born of imperfect knowledge; distrust comes of incomplete information; rivalries and antagonisms are the result of lack of study of one another's duties and responsibilities. Knowledge must be increased; education must become more common, before we can hope to disperse the clouds that darken our horizon.

Industry represents two great factors, or perhaps it would be better to say, includes and uses two main resources of life—the material and the human. It is concerned with nature and with men. Its province is to explore and extract the supplies in the natural world and to use men in their development, refinement and manufacture into commercial commodities.

Now, how can the University assist in this important business? Every one realizes that the study of nature and the application of scientific methods in the use of material, are essential to the best results. Nature will respond to the skilled hand much more readily than to the unskilled. In fact, there is always a churlishness in nature to the demand of the uncouth or unlearned explorer. She likes to be treated with respect and devotion; she grows angry against the crude and extravagant demands; she is generous with the careful and provident student of her secrets; the more knowledge we can bring to bear upon the efforts of those who are dealing with the raw product, the better for industry. Conservation of natural resources — or I should say, natural forces—becomes a growing necessity. We have suffered enormously from ignorance and waste. Our land has been impoverished by the greedy and avaricious. There is perhaps no department of life where we need to turn on the light of science more fully than in this realm of material things.

The human factor also claims the attention of the seats of learning. More and more are we realizing that education is essential to efficiency in the workman. Much has been done in the way of trade schools, technology courses, lectures in natural and applied sciences, manual training institutions, but we must enlarge the opportunities for a man in the industrial world to fit himself for the best work.

Education is the effort for a man in the industrial world to fit himself for the best work. Education is the effort to enable men to be themselves, that is, to develop their highest capacities. It must be insisted that the craftsman will be all the better for broadening and developing his mind. The University is interested in greater efficiency, but that is not her exclusive function in the world of industry.

After all, life is more than a trade. It is a vocation. The man who considers his calling both an art and a vocation will have the highest conception of life. He is not so much making a living as he is making a life. He is not pursuing his business for the more material results. No true man merely works for money. The business of life is not profit, but service for the common wealth. There is here no desire to depreciate wealth. It is a great force in our world; a trust that is sacred, but, after all, no man ever did his best work for money. It is only a hireling who has his eye on pay-day, skimping his labor and seeking only cash. The truest workman glorifies his vocation, by putting the passion of service into it.

Goethe passed a scathing comment on his tutor, when he said he was one who "remembered that he had a salary to receive, and forgot that he had a duty to perform."

The heresy which condemns our economic life is this, that business is primarily a means of making wealth for individuals. It involves us in industrial bitterness. The truth which alone can bring decency and happiness is this: that business primarily is an essential social service to the whole community.

Our institutions of education must preach this in season, out of season—at all times. They must further declare that man has a right to the pursuit of knowledge for its own sake, and not merely as a means of greater efficiency.

To provide information and instruction only so far as they will bear upon a man's immediate trade is to prostitute education. That noble word "education" implies the expression and development of the whole man, every faculty and endowment which he possesses. The workman must have opportunities to pursue his tastes and desires outside of his craft.

The divorce between art and labor has resulted in dwarfed and stunted souls. Why should not the laborer be free to gratify his desires for music, poetry or any other life's—what we may call—aesthetic satisfactions? To tie him down rigidly to such avenues of knowledge as lead directly to his vocation, must make him narrow and hard. All men's lives need mellowing. The grind of life tends to harden us all. If the professional man has opportunities for the gratification of particular tastes which lie outside his calling, is there any good reason for denying the same privilege to the workman? Who can measure the value of free libraries, university extension courses, and other facilities provided for the mechanic and artisan? It is the business of the University to put these things within the reach of the humblest man. He will return to his labors refreshed in body and soul, with a clearer vision, a new passion for serving his fellows, and a great zeal for his own peculiar tastes.

Education is the very foundation of a sane, and safe democracy. It will lift the whole community to a higher level and bring a larger measure of prosperity and contentment into society. It will banish the inequalities and injustices which are all too manifest, and it will help to correct the irritation which exists against class privileges.

There is perhaps no branch of Industry which provides a finer illustration of the relations between Education and Industry than that of the Pulp and Paper Manufacturers. It provides a splendid point of contact. It is the medium through which the one shall serve the other. Power and need are the two elements of life, but they must have a medium of introduction. Ideas and knowledge must perish without a point of contact with the great world of need. Your industry presents the very material by which the power of inspiration and ideals can be brought to bear upon the problems of life.

On the other hand, all the paper in the world will be of little use unless it has something to carry to the waiting souls of men. When one catches a vision of the stupendous circulation of books, magazines, papers and letters that bear the increasing knowledge all around the world, he must be impressed with the mutual ministry of education and industry.

It is the province of the University to furnish ideas, to increase the knowledge of humanity. It is the privilege of your Industry to act as messengers for the dissemination and transmission of knowledge. "How beautiful upon the mountains are the feet of those who publish the glad tidings of peace."

Without your aid the student could not be brought into contact with the immense resources of learning. He is hourly dependent upon his books and papers. Without your aid the great world, hungry for news, would sit in darkness and ignorance. Without our aid, the aid of the collegiate institution, your business would, in a large measure, halt and die. It must have a constant flow of information, research and knowledge, in order to fulfill its mission. It waits upon education for its supply of learning that the darkness may be lifted from human minds.

We must, therefore, join hands together in order that the benefits of education may, through the avenue of your magnificent industry, reach the urgent needs of our common life.

In a word, let me briefly sum up what we have been trying to show regarding the relations between the University and Industry.

Life ought to be one grand unit, every part related to every other part. There ought not to be any suspicion of aloofness and remoteness. We are all here to serve. Whatever gifts or endowments any person or institution possesses are held in trust for the whole corporate body. There must be a mutuality of ministry. Industry has a glorious contribution to make for the good of the nation and race. Education also has a high function to perform. By harnessing them together, the various forces in the world, each contributing to serving the other, the world will be lifted forward on its journey, and humanity will march triumphantly on to its highest and truest destiny.

An Appreciation.

Colonel Haskell (International Paper Company) expressed the appreciation and thanks of the association by saying:—With the rest of you, I have listened with rapt attention and absorbing interest to the inspiring and thought-compelling address of your distinguished guest. I know his theme is ideal and practical, and his presentation of the ideals of the world of motive and the world of methods being co-ordinated, will live with us and remain in our minds for many a day.

Now, I want to say that I feel it not only a privilege but an honor to propose a rising vote of thanks to your distinguished guest, who in civic life, as the head of your great University, is only keeping bright the laurels imperishable, which he won on Flanders' Fields.

(A standing vote of thanks was extended to General Sir Arthur Currie, after which the meeting adjourned.)

SAVING EXCHANGE ON FREIGHT CHARGES.

At a conference held in Ottawa, January 12th, the Railways submitted their plan whereby shipments may be forwarded from points in United States to destinations in Canada, freight charges "collect" and shipments will be accepted by them for movement in the reverse direction with charges "prepaid".

They state that a careful analysis of their settlements with U. S. Carriers show that the latter earn approximately sixty per cent of all freight charges collected on International traffic moving in both directions. As the U. S. Railways must, under the rulings of the Interstate Commerce Commission, receive payment for their hauls in U. S. currency, the Canadian carriers contend that sixty per cent of all freight charges collected by them in Canada on International traffic, must be paid to their U. S. Connections in U. S. funds. In order to protect the Canadian Carriers therefor it is proposed that whenever freight charges on such traffic, in either direction, are paid in Canada, a surchange equal to sixty percent of the exchange will be collected on the total freight charges.

Tariffs are being issued by the Canadian carriers providing accordingly, and will become effective on January 22nd.

The rate of exchange quoted for New York funds by the Bank of Montreal, at noon, in Montreal, on the last day of each month will govern from the first to the fourteenth of the following month; similarly such quotation at noon on the fourteenth, shall govern from the fifteenth to the last day of such month, inclusive.

Telegraphic advice will be sent to interested Canadian Railway Agents on the fourteenth and last day of each month, indicating the rate of exchange to govern the surcharge for the next ensuing period, and copy of such telegram will be sent to the Board of Railway Commissioners who will hand it to the Canadian Press for distribution to the public.

The surcharge will be collected at the rate governing on the date of shipment from Canada or on the date of arrival at Canadian destination.

In determining the surcharge fractions less than one half shall be disregarded and fractions of one half or over shall be counted as one per cent.

Example:—If the exchange on the 14th should be 18 p. c., the surchange to govern for the remainder of that month shall be 11 p.c.

It has also been arranged that the Railways will furnish the Board of Railway Commissioners with particulars as to how this plan is working out, so that if necessary the proportion of sixty percent estimated for U. S. carriers, may be revised.

It may be felt that shipments moving over routes with most of the haul in Canada are still bearing a heavy burden, but it will I think be appreciated that the proposed arrangement is an improvement over the present one, whereby total freight charges must be paid in U. S. currency.

An exception has been made of shipments of coal and coke, moving from United States, charges on which will still have to be prepaid to the Border in U. S. currency, balance coming forward collect payable at Canadian destinations in Canadian currency.

Yours faithfully,
G. P. RUICKBIE.

J. R. BOOTH, LIMITED, INCORPORATED.

Ottawa, January 23.—The announcement contained in today's Canada Gazette that the firm of John R. Booth has been incorporated as a joint stock company under the title of J. R. Booth Limited, will be of wide interest, for it has been stated more than once, the firm of John R. Booth has for some years now been the largest business in the entire world, operated as the property of one man.

The new firm has a capital of 10,000,000 dollars divided into 100,000 shares of $100 each. The first directors are John Rudolphus Booth, lumber merchant; Charles Jackson Booth, John Frederick Booth, Helen Gertrude Fleck, wife of Andrew W. Fleck, and Wentworth Green, solicitor, all of Ottawa.

JOHN R. BOOTH.

Active head of $10,000,000 concern at 94 years of age.

For almost seventy years the firm which now merges into the joint stock company, has been conducted personally by John R. Booth. It is understood that very little of the stock of the company is held outside the Booth family.

Considerable speculation has been indulged in as to the reasons of John R. Booth creating a joint stock company out of his vast business. One explanation is that the change will effect a saving of a great many thousands of dollars in connection with the Dominion income tax. John R. Booth, it has been surmised, has been one of the heaviest individual payers of income tax in the entire Dominion.

PAPER FACTORY IN ECUADOR.

According to the "Paper Trade Review" English capitalists have received permission from the government of Ecuador to build a paper factory in Ecuador where are still great forests to be exploited. This concession will include the permission of building a railway through the forest. A wharf and customs house in Guayaquil will be begun at once by the Government.

They say when a person commits suicide he usually has an unbalanced brain. We wonder if that would not apply to some of our chance-takers, who try to commit suicide by taking chances? Is there any difference?

The Association's Annual Meeting

The following pages contain the address of President Geo. Chahoon, Jr., of the Canadian Pulp and Paper Association, and the reports of the various Sections of the Association as presented at the annual meeting, Jan. 21, 1921.

THE PRESIDENT'S ADDRESS.

In looking back over the year just closed, there are a number of outstanding things in connection with the work of the Association that are entitled to your consideration.

First and foremost, I think we should place the initial steps which have been taken towards establishing a Department of Scientific and Technical Research in connection with the industry. The preliminary details have been carefully mapped out and the scheme as a whole, has, I am pleased to say, met with practically universal approval from the members to whom it has been submitted. The Secretary will place the subject before you in detail, together with a statement of the responses received, and it will be for you to say whether this work shall proceed and to what extent. The Executive Council have already given it their hearty approval.

GEO. CHAHOON, Jr., Retiring President.

In this connection, it is gratifying to be able to report that some progress has been made during the year by the Committee having in charge the preparation of a series of educational text-books, for which funds were voted at the two preceding general meetings. The Committee will make a report of their work at this meeting.

The Council, at the instance of the Technical Section and the Committee on Mechanical Standards, voted $1,000 to be applied to an investigation into copper alloys and bearing metals.

Newsprint Control Abolished.

An important event for the Newsprint Section of the Association was the termination, in July last, of Government control of the price and distribution of newsprint in Canada, which had been in effect for over two and a half years. This action, as you are all aware, was preceded by an appeal to the courts by Price Bros. & Company, Limited, against an arbitrary order issued by the Board of Commerce, the result of which was definitely to establish that the industry had for a long period suffered impositions and restrictions which could not be justified under an impartial application of the constitutiional law of the country. The Association and the industry are under obligations to Price Bros. & Company and to Sir William Price in particular for their courageous action in bringing the question to an issue.

Prior to the final lifting of control, a determined effort was made, in June last, by certain of the newspaper publishers to secure new legislation intended to reinstitute control in some other form. The Government, in fact, introduced a Bill in Parliament for that purpose, but withdrew it after prolonged hearing in which both interests were represented.

It should also be stated that amicable relations have been restored between the publishers and the newsprint manufacturers, and that some of the more representative publishers have made record of their convictions, as a result of the experience of the past three years, that Government control of the newsprint industry of Canada would be in a stronger position today had the laws of trade been permitted to take their natural course without interference.

Forestry Legislation.

The question of the conservation, proper administration and perpetuation of our pulpwood supplies continues to be one of the most vital affecting our industry. The provincial governments of Quebec and Ontario have recently revised the regulations under which their Crown lands are administered, not only with a view to enlarging their revenue therefrom, but also with that of ensuring a continuity of supply of pulpwood. The Association Executive and particularly the Woodlands Section, under the able guidance of Gen. J. B. White, have co-operated in these efforts. The Woodlands Section held a most successful meeting in Toronto during the fall, the first to be held outside the Province of Quebec.

At the Imperial Forestry Conference, held in London last summer, the Association was officially represented by Mr. Ellwood Wilson, while several of its members were also present in other capacities. The Conference developed a very considerable interest in Canadian forestry matters, and it is understood that its next meeting will be held in the Dominion.

The passage by the Congress of the United States of the legislation known as the Underwood Resolution, seeking to open the way to the free exportation from Canada of pulpwood cut from Crown lands, naturally provoked much interest among our members, who feared that this measure, if it were successful, would prove detrimental not only to their industry, but to the country at large, and therefore regarded its disapproval by the President with satisfaction.

The Executive Council feel that there is great need of educational work among the people of our several provinces in connection with the securing of proper, effective and adequate legislation for the protection of our forests, and the perpetuation of our wood supplies. In proposing such legislation, we have also realized that we have certain obligations of our own to perform, one of which is to assist in building up as far as possible a public sentiment that will support the several provincial governments in enacting this legislation and in giving it due effect. As one means to this end, the Executive Council proposes the coming year to send a representative of the Association to Northern Europe to gather what information we can regarding forestry conditions there and to supply the information so obtained to the newspapers and periodicals of Canada, and thereby to assist in convincing the people of the Dominion that it is to their interest, no less than our own, that progressive forestry legislation should be enacted, and that the proposed regulations should be made effective.

The Tariff Commission.

Through the Executive Council, a Special Committee was appointed to appear before the Cabinet Committee on Tariff on behalf of the pulp and paper industry. Mr. S. J. B. Rolland and Mr. F. J. Campbell appeared before the Commission and presented an argument which we have every reason to believe, met with the Commission's approval.

A. L. DAWE, Secretary Canadian Pulp and Paper Association.

Foreign Visitors.

The Association was honored during the year by having as its guests several gentlemen associated with the pulp and paper industry in Europe. Among them were Baron Mannerheim and Mr. Storjohann, of Stockholm, Sweden; Mr. Walter Graesbeck, managing director of the Finnish Cellulose Association, and Mr. Hj. Gronvik, managing director of the Finnish Paper Mill Union, of Helsingfors; and Mr. Carl Wahren and Mr. Alfred Byval, of Finland. The conferences which ensued were, on our part, aimed at impressing the representatives of these different countries with the benefits to be derived from the exchange of statistical information bearing on conditions prevailing in the industries of their countries and our own. These gentlemen returned to their homes apparently appreciating greatly the evidences of confidence and co-operation existing between the members of the industry in Canada and the United States, and with the intention of so organizing their own industries as to be in a position shortly to offer us, through the exchange of statistical information, all of the benefits that could be derived from a world-wide association.

Several of our own members also made trips abroad during the year. Mr. J. A. Bothwell and Mr. T. J. Stevenson, as the Association's representatives, and Mr. G. F. Steele visited the Scandinavian pulp and paper industries and received a cordial welcome, and were offered an insight into conditions as they exist in those countries. Mr. H. Biermans and Mr. C. Howard Smith also made trips abroad during the year and brought back information of much benefit to the industry generally.

Our relations with our sister organizations in the United States have continued of the utmost cordiality, and there have been numerous interchanges of personal visits and of normal and informal greetings from both sides of the line.

The Imperial Press Conference.

The Association was honored during the year by an invitation to appear before the meeting of the Imperial Press Conference, held in Ottawa. The publishers therein represented displayed a lively interest in Canada as a source of paper supply for the British Empire. Many of the visitors also took advantage of the opportunity afforded them of paying visits of inspection to a number of the mills.

Our Transportation Department.

The Transportation Department, under the direction of Mr. G. P. Ruickbie, continues to do much good and useful work, both in securing the adjustment of claims and in representing the Association before the Board of Railway Commissioners and other bodies. Not all the members make as full use of this Department as they should, but those who do so are well satisfied as to its benefits. Those who are not fully acquainted with the Department's usefulness and its work should study carefully the report in detail to be submitted at this meeting with a view to determining whether or not its services could not be used by them to their advantage.

The Association's Handbook.

For the first time in its existence, an attempt was made during the year to collate and publish, in easily available form, information and date respecting the history, progress and ramifications of the industry, which resulted in the publication of the "Handbook of the Canadian Pulp and Paper Industry," with which you are all familiar. Several thousand copies of the book have been printed and distributed, and the work has met with very general favor. Demands for the book have come in from practically every quarter of the globe where paper is used, and the results cannot but be beneficial to our members. It is the intention to revise this book from time to time so as to keep it as an up-to-date compendium of information in respect to the pulp and paper industry of the Dominion.

In Conclusion.

In conclusion, the members will be gratified to learn that the affairs of the Association generally are in a healthful state, as the report of the Secretary-Treasurer to be presented will indicate. There have been several additions to the membership, and much activity all along the line, The various Sections, as their reports to be placed before you will show, have all been usefully employed, and are planning progressively for the future. It has been found necessary to amend By-Law No. 10, governing the revenues of the Association, in some particulars in order to keep pace with the increasing activities of the organization, notice of which has been sent to all the members, and confirmatory action is asked of this meeting.

Personally, if I may be permitted a word, I would express my appreciation and gratitude for the loyal co-operation of the membership, as well as for the faithful services of all those engaged in carrying on the Association's work. I bespeak, also, your hearty support of the incoming administration, as I believe that during this year, perhaps more than ever before, close co-operation and mutual assistance will be found essential to the progress of the organization and to the welfare of its individual members.

Reports of Sections of the C. P. & P. A.

THE NEWSPRINT SECTION

By GEO. M. McKEE, Chairman.

The records of the year just closed, relating to the newsprint industry, show that price and demand continued upward from the beginning of the year until the very end.

The cry for supplies of newsprint from almost every country in the world taxed the producing capacity of this continent as far as it could be engaged. This insatiable demand forced prices upward, and created an enormous "spot" demand for newsprint paper. A large number of paper-making machines that usually made other grades of paper, were attracted to producing newspaper, and this, together with the installation of some new machines and the high production records of the regular newsprint mills resulted in the largest tonnage ever produced by the United States and Canadian mills. This approximated 2,400,000 tons, or a gain of nearly 11 p.c. over 1919 production.

According to the figures available, production for the sixteen Canadian companies reporting to this Section, was about 883,000 tons, a gain in production of 113,198 tons, or nearly 15 p.c. A portion of this increased tonnage was due to the starting of new machines in some of the existing plants, but not entirely, as all of the mills operated throughout the year at a higher production efficiency than ever before. This high operating efficiency is brought about by friendly rivalry among the mills, and the free exchange of operating data, all of which tends to place our industry on a very high plane.

In reviewing the past year with its continued increased demand for our product, the opening of the new year presents new problems as regards the future outlook in reference to the phases through which general business is now passing. It is quite possible that the prices of newsprint paper may show some reduction, especially in the so-called "Spot" market, during the coming months. The Canadian manufacturers have had no interest whatever in this market, as practically the entire tonnage has been sold on a contract basis, at reasonable prices. In fact, some of the contract prices were extremely low, taking into account general market conditions. None of the manufacturers were attracted by the frequent "Spot" offers, but adhered strictly to their contract obligations. With this record behind them, the Canadian manufacturers of newsprint have little interest in the much talked about world wide readjustment in commodity prices; their prices have not been high, and therefore have little to fall.

It is gratifying to report that the manufacturers were able to handle the requirements of the Canadian consumers throughout the year, without Governmental interference. The Canadian market having been placed on a competitive basis, all the publishers were fully supplied with paper, and amicable relations now exist between producer and consumer. All of the former antagonistic attitude having disappeared, the publisher now shows every desire to meet the manufacturer on a straight-forward business footing.

GEORGE M. McKEE, Vice-President of the C.P. & P.A., Chairman Newsprint Section.

With regard to the future outlook, it is impossible to estimate how long readjustment will take. The underlying conditions of the Canadian newsprint industry are sound, and it is only reasonable to expect that, with the prestige of Canadian newsprint in the world's markets, we will readily adjust ourselves to the new conditions, and that the industry will enter upon a new era of expansion and prosperity exceeding any that it has heretofore enjoyed.

REPORT OF JOINT COMMITTEE ON RESEARCH.

The report of this committee is held over so as to include with it the important discussion of the matter by the main Association and by the Technical Section.

(See page 111 for election of officers.)

MECHANICAL PULP SECTION.

By J. A. BOTHWELL, Chairman.

The year 1920 was one of extreme activity for the members of the Mechanical Pulp Section. In the early part of the year the abnormal demand for newsprint paper and the high price level reached in the spot market was reflected in an increased demand and higher prices for groundwood pulp and the mills were kept working at high pressure. With the easing off of the spot news market there was, during the latter part of the year, a falling off in both the demand and the market price of groundwood pulp, counteracted, however, in part, by conditions of appreciable extent. The abnormal prices prevailing throughout a large part of the year were absorbed to some considerable extent by higher production costs.

The export demand was well maintained during the year, as is indicated in the accompanying table, showing exports month by month in comparison with those of the preceding year: -

J. A. BOTHWELL, Chairman Mechanical Pulp Section.

Exports of Mechanical Pulp by Months.

1919-1920.

	1919.		1920	
	Cwts.	$	Cwts.	$
January . . .	274,384	262,322	609,20	972,574
February . . .	164,673	217,421	266,826	472,383
March	169,451	226,554	289,092	562,308
April	161,449	217,711	198,664	506,369
May	255,622	356,905	279,439	779,710
June	581,151	619,981	892,309	2,136,767
July	346,174	436,604	838,118	2,528,993
August	387,435	475,735	816,081	2,809,266
September . .	415,046	511,402	424,689	1,877,053
October . . .	2,038,193	1,942,716	536,329	1,986,807
November . .	894,206	997,408	263,976	1,016,184
December . . .	541,240	817,692	*......	....
Total . . .	6,231,024	7,082,451	5,414,729	15,648,424

* Figures not available.

The heavy exportation of groundwood in October 1919 as compared with October 1920 is accounted for by the fact that in the former month heavy accumulations of Canadian stocks found an outlet in England and that no such accumulations have since been made in this country.

The bulk of the last year's exports of this grade of pulp, as in former years, were sent to the United States, although a considerable proportion of them were sent to the United Kingdom. The outlook is for an increased development of the United Kingdom trade.

The unusual prosperity enjoyed by this branch of the industry during the middle part of 1920 led to the formation of many new enterprises for the purpose of manufacturing mechanical pulp, some of which will undoubtedly be brought to the producing stage. Not all of the proposed developments can be said to be based on sound economic lines and it is altogether likely that many of them will never get beyond the promotion stage.

The year closed with this branch of the industry in a healthful condition and with prospects reasonably good for the future.

The Section is indebted to the Association's executive officers for much helpful assistance throughout the year and for their assistance in promoting a spirit of cooperation among the members which has proved of great service.

BOOK AND WRITING SECTION.

By H. F. E. KENT, Chairman.

The Book & Writing Section are pleased to report that business has been very satisfactory for the past year; the demand for their product for the first ten months was unprecedented and it was impossible to satisfy the buyers. During the last two months, the demand eased off and the mills have been able to ship much more promptly.

The Section held eight meetings during the year at nearly all of which there was a full representation of its members. The spirit of co-operation shown is most

H. F. E. KENT, Chairman Book and Writing Section.

encouraging and, is helping to get this section in a position to meet all competition and do its part in making Canada the greatest paper-making country in the world.

Raw materials were very scarce and the qualities were much below normal, making it difficult for the mills to maintain uniformity in grades. Coal was very hard to procure, prices extremely high, and the quality poor. Wages during the year increased 50 p.c., all of which necessitated very much higher selling prices than previously.

The mills, in order to meet the unusual demand made by the home market for Book and Writing paper, had to curtail their export business during the year although, owing to the world-wide shortage of this commodity, they could have secured better prices from outside. They felt it, however, a national duty to keep their own market supplied first.

The Section had several meetings with the Canadian Paper Trade Association during the year to discuss conditions and to try to get business on a more uniform basis. These meetings were fully attended and the results will prove to be very beneficial to both the manufacturers and the Merchants Association.

While business during the past year has been very satisfactory, the indications are that the first month or two of this year will be rather quiet. There will be, in our opinion, before the first quarter has passed, a decided improvement and it will be found that this year will work out as satisfactory as the past year.

THE BOARD SECTION.

By JOHN F. TAYLOR, Chairman.

The past twelve months has been a year of extremes commencing with exceptional strength and a strong demand continuously in evidence until the last three months.

The demand for the first half of the year was far greater than the supply and the situation even as late as August was so urgent as to influence the box manufacturers to ask that export shipments be diverted for home consumption.

The manufacture of boards in 1919 in the United States, according to the Federal Trade Commission reports, showed it to be 1,950,037 tons. The production in Canada of all classes of board for the same period amounted to 137,678 or roughly, 7 per cent of the U. S. total.

In the early part of the year, therefore, on account of the tremendous demand in the United States market prices for all classes of boards, rose in a very generous manner. Towards the Fall, however, a slackening of business in the United States caused an important drop in the consumption of board.

In fact, in all lines there was a cessation in buying resulting in the closing down of a great many of the board mills and the usual attempts to capture the limited Canadian market by forced selling methods.

Market conditions have now brought prices to a much lower basis than heretofore and there is every evidence of a resumption of trade within a month or sixty days which, while not promising to be on the scale of the previous year, will provide business for mills both in the United States and Canada in sufficient volume to keep them properly employed.

The Board Section has held regular meetings, some 10 gatherings taking place during the twelve months during which time the opportunity has been taken to meet the box makers of Canada in an endeavor to facilitate manufacturing and trading conditions and such conferences as were held indicated that the best possible spirit exists between the board mills and their customers.

JOHN F. TAYLOR, Chairman Board Section.

There is undoubtedly some work to be done between the box makers and the board mills in regard to standardization of sizes and it has also been urged during the year on behalf of the manufacturers that a great deal of the fluctuations in the market could be avoided by the institution of quantity contracts.

As regards future development of the board business it may be mentioned that several mills are overhauling and installing new equipment that will undoubtedly increase production during the present year. Whether such plants as those manufacturing wallboard and container boards will benefit to the fullest extent from a revival of trade remains to be seen.

THE WOODLANDS SECTION.

By J. B. WHITE, Chairman.

The past year has seen an increase in the number of members of the Woodlands Section and a greater interest taken in the improvement of logging conditions in all parts of the country.

A largely attended meeting of the members was held in Toronto on December 8th and 9th at which time some very interesting papers were read on Swedish conditions of lumbering and also interesting papers having to do with Canadian conditions of forest lands.

An interesting development of the present day methods of logging has been the entrance of the airmen as a factor in woodlands work. Unquestionably the time is at hand when a great deal more use will be made of the airmen than at present in fire patrol and map work and while in an experimental stage at the present time as regards equipment flying is rapidly becoming a perfected science.

Several members of the Woodlands Section have expressed the desire to have a medium for exchanging ideas in regard to equipment used in logging and bush work.

During the year the American Association has also formed a Woodlands Section and there is every possibility of a certain degree of cooperation between the two organizations.

THE COATED PAPER SECTION.

By GEO W. PAULINE, Chairman.

The Coated Paper mills were all fully employed throughout 1920, but were severely handicapped in supplying the demand, owing to shortage of paper stock.

Prices advanced during the year, until August 1st, from which date they remained stationary until the end of the year.

New business has eased off to some extent, and consequently the mills are gradually catching up on back orders.

There is an optimistic feeling regarding prospects for the current year, which we trust will be fully realized.

THE FELT PAPER SECTION.

By W. R. McNEIL, Chairman.

The year 1920 has been a very eventful year for the felt paper mills, comprising the Felt Section of the Canadian Pulp & Paper Association.

As on other lines of paper, the demand for felt paper during most of the year exceeded the supply, and to meet this increased demand several of the mills have added new equipment and are now ready to turn out a materially larger daily tonnage.

The future of the felt paper business in Canada looks very bright because at least 90 per cent of the production of felt paper is converted into materials used for building purposes and the demand for new buildings all over the Dominion will not be fully met for some time.

W. R. McNEIL, Chairman Felt Paper Section.

Our Association Meetings have been held regularly each month and with very few exceptions have been attended by 100 per cent of its members, which indicates the interest being taken in our Association.

To Mr. A. L. Dawe, we again express our gratitude for his unceasing efforts in helping along the success of our Section in so many different ways.

THE WRAPPING PAPER SECTION.

By F. J. CAMPBELL, Chairman.

During the whole of 1920 the Wrapping Mills were producing to capacity and found an active demand for their output. For the first six months of the year costs, and with them prices, kept steadily advancing: the maximum being reached by the end of June. For the remainder of the year there was an active market at steady prices, and it was not until December that any slackening off was apparent.

F. J. CAMPBELL, Chairman Wrapping Paper Section.

The advance in freight rates during the year was a very serious matter on such a heavy commodity as wrapping paper, and it is to be hoped that with the start already made freight rates will soon reach a more reasonable level, and that the Government Railways may facilitate this by a reasonable gain in efficiency.

Wrapping papers like all other commodities are now facing deflation and if this is met with courage and common sense, no one should fear the ultimate result. By lowering prices gradually, buyers and others carrying stocks will be saved from serious loss, while the mills should be able to keep running with a fair return.

All the mills are in a strong position, and by exercising reasonable care it would appear as if satisfactory results could be looked for during the year 1921.

Meetings of the Section were held throughout the year and it is satisfactory to report that trade customs and terms are now firmly established in the wrapping paper trade.

THE TECHNICAL SECTION.

By L. H. SHIPMAN, Chairman.

I take great pleasure in rendering herewith a statement of the progress of the Canadian Technical Section during the year 1920. It is indeed a pleasure as retiring Chairman to be able to state that the momentum acquired in past years through the excellent leadership of our officers of those years has not depreciated and that there is no apparent tendency as yet of this section to get into a rut. We have truly progressed during the year and all signs indicate our Section to be in a very healthy state of growth and of general usefulness to the parent Association, to the industry as a whole and to our individual members.

General Meetings.

There have been held two general meetings, the annual meeting in Montreal last January, and the Summer meeting in Western territory, as the guests of the Spanish River Company and International Nickel Company. These were both successfully carried out and helped to increase the general acquaintanceship of members with each other, all of which is a factor in the fostering of that spirit of friendly co-operation between members which is so vital to the successful functioning of our Section.

L. H. SHIPMAN, Chairman Technical Section.

We had some very timely discussions at the January meeting, particularly on the question of wide and slow versus narrow and fast newsprint machines, the discussions being led by Mr. R. A. McInnis, of Abitibi, and Mr. John Ball, of Price Bros., and this discussion has led to others between members later on during the year.

Besides this main discussion we had a very interesting paper by Mr. F. J. Hoxie on the Protection of Wood Piles, which brought out a very good discussion.

The Summer Meeting consisted of a visit to the Plants of the Spanish River Pulp & Paper Mills and the International Nickel Co. This meeting like our usual Summer meetings was given over more to mill visiting and the personal exchanging of experiences between members than to elaborate formal discussions and I believe served its purpose well.

Mr. H. S. Taylor gave a very fine paper on "The Heat Insulation Value of Gypsum Roofs," illustrated by stereoptican views, and Prof. Ralph H. McKee, a very instructive paper on the "Utilization of Waste Sulphite Liquor for Alcohol and Fuel.

At Copper Cliff, Ontario, the smelting of copper-nickel ore was thoroughly demonstrated by the International Nickel Co., and the question thoroughly discussed of the utilization of its waste gases to recover the SO_2 present for use in sulphite manufacture.

Work of Standing Committees.

Our standing committees have for the most part made distinct progress. I will not attempt here to enumerate the work of the committees during the past year but will leave this to be shown for itself in their various reports which will be presented to our annual meeting on January 19 & 20, 1921.

I do wish to commend very highly, however, the efforts which have been put forth by the Committee of Education with special reference to the Text Books, for the industry. This committee has met and overcome obstacle after obstacle and deserves the praise and whole hearted support not only of our Technical Section but of our whole industry. It will have a very interesting report to present at the annual meeting.

Two other committees which have been doing especially hard and conscientious work are the committee on Testing Moisture in Pulp and the committee on Mechanical Standards.

Membership.

Our membership has grown steadily throughout the year as is shown by the following table of comparison:

	Jan. 1, 1920	Jan. 1, 1921
Full members	98	108
Associate members.	12	14
Junior members.	17	27
Student members	14	17
Total	143	166

Summer Students.

The plan which our Section undertook two years ago, in co-operation with the mills during the Summer vacation, has been carried on successfully this year, and it now seems evident that ultimately the industry will obtain some valuable men in this way who otherwise might have been led into entering other fields of manufacture.

The essays which have been turned over to the committee of Judges for awarding the three prizes of the Technical Sections have in the main seemed to be of a higher order of merit than the average of those of last year.

This activity of the Section promises well for future results. There were 41 students listed on the records of the Technical Section as undertaking Summer work in the mills during the Summer of 1920 and from these students, fourteen essays were received for the prize competition.

Technical Section Research Dept.

Finally I wish to direct your attention to a piece of work of the Technical Section which gives promise of being one of its most important phases of work, given proper support. This is the development which has arisen through the previous efforts of our former committee entitled The Advisory Committee to Forest Products Laboratory.

My predecessor in office, Mr. Stadler, in his report last year stated that "the Executive of our parent Association had authorized a substantial contribution towards the Superintendence of the Forest Products Laboratory" and since his report we have been advised that such contribution is not acceptable by the Government. It has seemed as though the establishment by ourselves of an effective research organization working on the technical problems of our industry, through the rehabilitation of the pulp and paper section of the Forest Products Laboratory was almost a hopeless task.

Recent developments, however, indicate that we have a possible solution to this problem.

Early in the year the Executive of the Main Association instructed your Chairman to appoint a committee from the Technical Section which should make a thorough investigation of the whole situation and report with recommendations to the Main Association at its annual meeting in 1921.

Your Chairman thought it wise to defer the appointment of such committee until after the Summer meeting of 1920 and during the intervening months to get opinions from various members of the Technical Section and to arrange for a discussion of this question at the Summer Meeting. This was done and the concensus of opinion brought out before the Summer meeting was to the effect:—

That knowledge of the actual accomplishments of the Forest Products Laboratory to date was insufficiently spread among our members.

That the benefits of an Association laboratory were not clearly enough understood by the majority of our manufacturers who would be asked to support such a laboratory, and finally,

That a definite scheme for the accomplishment of the purpose in hand had never been presented by anyone.

It was further shown that the idea would very likely be further along at the annual 1921 meeting if, instead of having a Technical Section committee report to the Main Association, a joint committee be appointed one-half from the Technical Section and one-half from the manufacturers.

This was done and I am very much pleased to report that this committee has a very definite program to present to the Association and through it to the industry, at our forthcoming annual meeting.

While this annual report should be confined to the activities of the Technical Section during the past year I feel I would be remiss in my duty as Chairman, while the above important matter is up for decision if I did not point out here the manner in which a well conducted Association research laboratory could be of very particular benefit to the industry. Not all our Section members are Technical men, that is, trained in the laws of physics and chemistry underlying our industry, and it is to these non-technical men in particular that I wish to point out the advantages which might accrue from our having our own research organization.

There are innumerable scientific problems the solution of which is possible and will immediately react to distinct advances in our manufacturing processes. I will go into details with one alone to show the possibilities.

We are most of us familiar with the fact that about a year ago the International Nickel Co. undertook an investigation upon the feasibility of erecting a plant to recover and liquefy the SO_2 being wasted to the air in their waste smelter gases. Some of us are familiar with the results of the investigation, namely, that the cost of this recovery was such that the price to the paper mills of the recovered liquid SO_2 was not sufficiently below the ruling price of sulphur to warrant the mills interested in giving up the use of powdered sulphur.

This decision was made because the present knowledge of sulphite making made us sure of only one benefit: namely, the elimination of our sulphur burning apparatus and process. This saving alone would not warrant any mill to get into the position of being tied up to liquid SO_2 with always a possibility in view of a large drop in the price of sulphur.

There is lacking to the trade a piece of information which if it had been available might have made the decision favorable to the use of liquid SO_2 even at a price higher than that of powdered sulphur. There are facts to be had through a research organization on this subject which may entirely change our present ideas on sulphite making.

We have in our industry advocates of cooking with high strengths of sulphite acid and on the other side those who are as strongly convinced that high strengths are not economical. With liquid SO_2 available we could make acid of strengths hitherto physically and chemically impossible because from burning sulphur, a fraction over 20 per cent SO_2 is the theoretically strongest gas which can be produced. We technical men know that there is a saturation limit with 20 per cent gas which would prevent the acid absorbing more than a very definite strength of SO_2, but that with 100 per cent gas from liquid SO_2 this saturation point would be raised very materially, thus allowing us to cook with acid strengths unheard of to date.

But what would this ability avail us? Theoretically, we would be able to reduce our cooking temperatures to a point where we might get increased yields of 15-25 per cent; also we might get pulp out of our digesters in six or seven hours which would be as easy bleaching as that made today in a twelve hour cook, and which would be nearly twice as strong fibred.

This, however, is theory, and we know that these new conditions would entail new problems. For instance, our present sulphite bronze fittings would not stand up under the strain of high temperature and pressure in presence of this extremely high strength acid. Again, at the end of the cook, there would be so much SO_2 left in the acid that special new arrangements would have to be devised for its recovery; again, the action of 100 per cent SO_2 gas in our tower acid systems has not been determined, and the question remains to be determined whether under this condition of gas it would be advisable to make the strong acid in the tower or the digester itself.

With the possibilities of enormously increased yields, materially reduced steam consumption and cooking time, however, this becomes immediately a problem for a well organized association research department. Since it is, in its entirety, somewhat too large a problem for the ordinary mill technical department to hope to tackle and solve.

I have gone into this amount of detail merely to show some of you how such a scheme as will be presented by your joint committee can be made to be of special vital benefit and importance to our industry and I sincerely hope and trust that you men of the Technical Section and particularly you manufacturers will see into the future enough to realize that with proper financial backing, plus hearty cooperation—and without this latter the scheme will fall—we have a wonderful opportunity to put this Canadian industry far in the lead in its own field. Problems exist in our industry in all its branches which when solved will prove as revolutionary as the one outlined above.

Finally I wish to thank most heartily all the members of the executive council of the Technical Section for their very enthusiastic support during the past year. Every one, when called upon, has done his part in full measure, and particularly do I feel grateful to our Secretary Mr. Dawe, for his most helpful guidance in the performance of my duties as your Chairman.

THE TRANSPORTATION DEPARTMENT.

By G. P. RUICKBIE, in charge.

During the past year your transportation department has given close attention to all transportation matters, affecting the industry and begs to report as follows:

In July last, the Railway Association of Canada, on behalf of all Canadian Railways, made application to the Board of Railway Commissioners, for a general increase of 40 p.c. in freight rates, it being claimed this amount was necessary to meet increased wages and operating expenses. Your Executive decided that this Association would not oppose such general increase as was found necessary, providing this industry was not singled out for a higher increase than others. Hearings were held by the Board of Railway Commissioners in Ottawa, commencing August 10th, and as a result Canadian Railways were allowed to increase rates in Canada, East of Fort William 40 p.c.; West of Fort William 30 p.c. New rates on this basis became effective September 13th, 1920. The Order further stated that effective January 1st, 1921, the percentages of increases would be reduced to 35 p.c. East of Fort William and 30 p.c. West. Adjustment has been made to this basis.

Several exceptions were made to this general increase, the following being the interest to our members:

Crushed Stone . . . . No increase.

Coal—

Rates 80 cents per ton or less, increase 10 cents per ton.
" over 80 cents not over $1.50 " 15 " " "
" over $1.50 per ton " 20 " " "

No modification of the above increase on coal was ordered for January 1st, 1921.

At the time the application of the Canadian Railways for increased rates, was being considered in Ottawa, the Interstate Commerce Commission at Washington announced that United States Railways would be permitted increases in their rates sufficient to allow them net earnings equal to six percent of the valuation set for the various groups of Railways by the Interstate Commerce Commission, as provided for in the Transportation Act of 1920. Under this Order Railways operating in Official Classification territory (roughly lines East of Chicago) were permitted an increase of 40 p.c.; Railways in Western Classification territory 35 p.c. and Southern Classification territory 25 p.c. On through rates between two of these territories an increase of thirty three and one third per cent was allowed. Under this Order the proportions accruing to United States Railways on shipments to and from Canada were to be increased the same percentages as domestic shipments and consequently, with the approval of the Board of Railway Commissioners for Canada, through rates between points in United States and points in Canada were increased in some cases forty per cent, in others thirty three and one third per cent. No change was ordered in these International rates, effective January 1st, and no exceptions were made of any particular commodities, so that the rates on coal from U. S. Mines to the Canadian Frontier were increased approximately 40 p.c., while the rates from the Frontier to the Mills were increased the specific amounts allowed by the Canadian Board.

During the past year the Transportation Committee appointed by your Executive with Mr. Guy Tombs as Chairman, has held several meetings and has endeavored to look after the interests of the industry as a whole as far as freight rates are concerned. During the hearing before the Board of Railway Commissioners in Ottawa last summer strong representations were made that instead of rates on woodpulp and paper to United States points being increased 40 p.c., the basic rates should be 40 p.c. and rates from other mills adjusted on the proper differences over or under the basic rates. Favorable consideration was promised by the Railways as soon as the United States Railways took similar action regarding rates from New England mills, and while it has taken longer than we anticipated to arrange such adjustment we are in hopes it will not be much longer delayed.

An appeal from the Order of the Board of Railway Commissioners was taken by the Government of Manitoba and Saskatchewan to the Governor-in-Council, but the Order allowing the Railways to increase their rates stands. Complaints have also been made by British Columbia interests against rates applicable in that Province, and by the Governments of Nova Scotia and New Brunswick jointly with local business interests, against present rates to and from the Maritime Provinces. The Western Governments allege that improper discrimination exists in that rates in that territory are higher than in Eastern Canada. The Governor-in-Council has suggested that the Board should investigate this feature. In view of those various complaints the Board of Railway Commissioners has announced that hearings will be held at various points throughout Canada, starting in April next, to investigate freight rates generally, and all having grievances will therefor have an opportunity of being heard.

Your Transportation Committee decided, at a recent meeting that rates at present being charged our members on pulpwood and other raw materials should be carefully analysed. In order to make a proper survey of the situation it will be necessary to get considerable information from the mills. Some of this has already been asked for and your cooperation in furnishing it is solicited.

Only five members have so far taken advantage of this service and of this number, two have preferred to file their own claims with the railways. In such cases the expense bills are returned to them after auditing, with particulars of any overcharges discovered, and reference to the freight tariffs authorizing the rates which should have been charged. If the amounts of such overcharges were added to the above figures the totals would be considerably greater.

Special care is taken to see that any claims entered are based strictly on the legal tariff rates, thus avoiding any friction with the Railways Claims Departments. The three claims above referred to as being withdrawn were originally filed with the Railways owing to a misunderstanding as to routing. When it was pointed out that the routes over which the shipments travelled had been specified by the shippers, and the Railways were not responsible for the misrouting, the claims were withdrawn.

The number of claims entered does not represent the number of bills on which overcharges occurred, as where a number of shipments of the same commodities, moving between the same stations on account of the same firm, have been overcharged, one claim is very often made to cover all such shipments.

While rates which are being charged may be in accordance with published tariffs, it sometimes happens that they are on an improper basis, having in mind the service performed and rates in other localities on the same commodities. In several such cases this department has been instrumental in arranging reductions, which, of course, are benefits of a permanent nature to the mills interested.

With the great number of changes which have occurred in freight rates in recent years, tariffs are very complicated, and as the indications are that in the future still further adjustments will be made it would seem important that all freight bills should be carefully checked.

Requests for freight rates, tracing shipments, and other information are being received from a number of our members, from time to time, and are being given careful attention.

On March 4th last the Executive authorized this department to audit inward freight bills for any members desiring to avail themselves of the service. A nominal charge of one cent per bill audited, was decided upon. Since that time a total of 11,350 bills have been audited, the amount realized by the Association for this service being $113.50 The following figures will give some idea as to how this arrangement is working out:—

Total number of bills audited 11,350

	Number.	Amount.
Total claims entered	51	$3,498.13
Total claims paid	22	$1,283.58
" " withdrawn	4	213.56
" " outstanding . . .	26	2,000.99
	51	$3,498.13

CATALOGS RECEIVED.

Among the catalogs and bulletins recently received by the Pulp and Paper Magazine are the following: They may be obtained from the firms mentioned.

Worthington Pump and Machinery Corp., 115 Broadway, New York—Catalog of 126 pages showing details of most varieties of pumps, condensers, compressors, valves, etc.

Mills Works and Machinery, Ltd., Pont Rouge, Que.—A 16-page booklet descriptive of the Hardy Paper Stock Regulator, with illustrations and explanations.

Whatman's Filter Papers—A list of papers (and their prices) produced by the well known firm of W. and R. Balston, Ltd., and distributed in North America by H. Reeve Angel & Co., 7-11 Spruce St., New York.

News from Our Advertisers

The Gibbs-Brower Company.

The Gibbs-Brower Company, who are perhaps, best known to the pulp and paper industry in Canada and the United States as machinery builders have opened a pulp and paper mill brokerage department which will be in direct charge of Mr. Ogden Brower, Jr. The headquarters of this department will be at 261 Broadway, New York, with a Western office at 181 Quincey Street, Chicago.

Heretofore there has been no firm or individual who acted as a broker specializing in pulp and paper mill properties. Gibbs-Brower Company realized that buyers did not have the time to go out and investigate the different properties that might be offered in the advertising columns of the pulp and paper journals or otherwise and decided that buyers would appreciate the gathering of all data regarding mills listed for sale so that the buyer could, from the information at hand, concentrate his attention on the ones that were suited to his requirements. They list all mills offered for sale, investigate these properties and get complete data as to their equipment, capacity, general condition, facilities for receiving raw material and shipping the finished product and all other matter that would be of interest to a prospective buyer.

Both Mr. O. Brower Sr., and Mr. O. Brower, Jr., are particularly well equipped to manage a department of this kind. They have been selling machinery to the pulp and paper mills for a great many years and have an intimate and extensive knowledge of the industry in the United States and Canada. They advise us that this department has been particularly successful and that both buyers and sellers have appreciated the assistance and co-operation they have received. This department is being extended to cover Canada intensively and Gibbs-Brower Co., should be of considerable use to Canadian firms having properties for sale or to companies or individuals desiring to purchase plants.

International Business Machines Convention.

Optimism was the keynote at the Convention of the Canadian Sales force of the International Business Machines Company held at the offices of the Company, Royce and Campbell Avenues, Toronto, in the week of January 3rd, 1921.

About 75 salesmen in all were in attendance at the Convention. They represented the three well-known divisions of the Company—International Time Recorders, International Dayton Scales and International Tabulating and Sorting Machines.

Figures presented at the Convention showed that the Canadian Organization held all sales records for 1920 against the sales forces of the American firms manufacturing similar products. In fact, the Canadian organization has lead the entire world in sales, on percentage of quota, for four successive years. The Canadian boys, naturally felt elated and justifiably so in view of the fact that the Sales forces in the United States and England number some 1,100 men, and that all quotas are based on the same figures, namely, of population.

One of the neatest holiday remembrances which reached our office is from the English China Clays Sales Corporation, 33 West 42nd Street, New York City. This is in the form of a very attractive and substantial paper clip.

The Paper Machine—Its History and Future Development

An Historical Sketch.

The first paper machine using a continuous wire for forming a sheet of paper was patented in 1799 by Nicholas Louis Robert of France.

He turned the patents over to his employer, a man named Didot. Didot did not push the matter except to interest one John Gamble, an Englishman, and Gamble in turn interested the great stationers of the time and the largest papermakers in England. Henry and Sealy Fourdrinier.

The Fourdriniers and Gamble took the machine to the Halls Engineering Establishment at Dartford, in Kent, England, which was in charge of a young man named Bryan Donkin. Bryan Donkin found a very interesting problem but one that had not been worked out, and he really is the first man to develop a machine for making paper.

Donkin worked with many trials and tribulations for about three years, at the end of which time, however, he did make a continuous, unbroken web of paper on the machine that took the name from his partners, the Fourdrinier brothers. This machine was started about 1803.

It does not seem clear that Donkin managed to get dryers on the machine until a very much later date. This is easily understood from the fact that the aim was to form a sheet of paper and go on drying it in lofts as with hand made paper. Somewhere in the neighborhood of 1815 to 1817 Donkin not only made copper dryers, but had steam in them, and further made calenders, so that by 1823 he had a Fourdrinier machine practically, so far as fundamentals are concerned, that we have today. It was as late as 1823 before a full-fledged paper machine was running in France.

While Donkin was fussing and perfecting his Fourdrinier one John Dickinson was doing the same thing with a cylinder mold, and he made a paper machine and it was Dickinson's machine which first came to America to the Brandywine mill in Delaware owned by a Mr. Gilpin. This was in 1817, and this machine did not have dryers.

In 1827 the first Fourdrinier machine came to America. It was built by Bryan Donkin and was delivered in October of that year and set up at Saugerties, N. Y. In the same year another machine arrived during the month of December, and was set up at South Windham, Conn.

The first Fourdrinier actually built in this country seemed to have been built by a concern called Phelps & Spoffard in Philadelphia, Pa., having a wire, presses and dryers. The next machines seemed to have been built at Brattleboro, Vt., then Goddard & Rice of Worcester and Smith & Winchester of South Windham, Conn.

There have been a good many builders since, of those of the early days two stand out as really having added to the construction and development of the machine beyond any others of the older time builders, viz: Nelson Gavitt of Philadelphia, Pa. and I. L. Severns.

The builders of the present day are so well known to you all as not to require mentioning. Almost every one of the present builders, however, have their origin either directly back in the names I already mentioned or else are the product of the vicinity in which they were located, first doing repair work, and then building parts of paper machines, until they drifted into devoting their entire attention to them.

Many names have arisen in the last 25 years which have added greatly to the development of the paper machine, but it is too soon to mention them. One, however, passed to his reward, I think it only fair to name. Mr. Thomas H. Savery of Wilmington, Del., certainly devoted a great deal of his life to bettering the conditions of the paper making machine.

The dream of all these men, including the original inventor, was making paper at an ever-increasing speed, hampered by their machine shop facilities, hampered by prejudices of papermakers; nevertheless they did each contribute and so far as they could see went practically to the limit.

You will be interested when you look at the picture of Bryan Donkin's machine, and think of the change between his time and ours, and you will be forced to speculate as to what the paper machine will be a hundred years hence.

It is natural to the average human animal to say. "It can't be done," and this method of procedure was no different 100 years ago than now. Robert, the prophet and inventor, broke his pocket book and died a subject of charity because the world practically said paper "could only be made by hand."

So today the future of the paper machine is confused to our view because in the discussion, facts are distorted, assumptions made on one side that are either not true nor logical and are continually adhered to, because many are merely interested in sustaining and proving "it can't be done," and on the other side we have equally wild statements and assumptions from those in favor of the proposition, whatever it may be.

We are prone to forget that if some one fundamental link in such an argument as the ultimate speed at which paper can be made should be found incorrect and then corrected, that the whole structure of our opinions would have to be rebuilt, and, my friends, just such things have occurred in the past and are happening today.

I have been manufacturing paper making machines for thirty-two years, and have devoted all by life to seeking the principles that underlay the subject of making paper at high speeds. Handicapped at every turn by the differences of opinion coming from equally good papermakers, men who had the confidence and the respect of the trade, whose opinions were the last word with a large following, and many times in the past I have been discouraged and have expressed myself in the following way, "that I could draw a specification for a practical papermaker acknowledged by many without a peer, and have the specification

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* Address delivered by Stuart D. Lansing, President of The Bagley and Sewall Company before The American Pulp and Paper Mills Superintendents' Association, at Niagara Falls, New York, January 8, 1921.

absolutely according to his beliefs, and then submit same to an equally admired papermaker with an equally large following who would promptly condemn the whole thing almost to a point of saying a machine so built would not even make paper.

Our world of paper making has rocked backward and forward in its opinion, in the past, on many subjects that now seem almost absurd, viewing them from the light of subsequent positive knowledge, and to get a clear idea of our own limitations let me illustrate some of the controversies that we, the men present here today, have in the past indulged in, when today we can't even get a discussion upon.

When I first began my checkered career searching for facts about papermaking I found practically all papermakers declared that a Knocker screen was the only method possible to screen stock properly. The old Gould screen was the favorite. It had the merit of hanging together better than others, with its great foundation plates 4" thick and massive framework, and could be heard roaring 2 miles off.

The poor man named Victory, the inventor of the first operative Bellows screen, ate snowballs to sustain life. My own company spent thousands of dollars trying to help him, but the prejudices of papermakers were too much for him and us, and the thing was condemned. John Warren, having a little faith left, substituted a cam for the eccentric cut in the driving shaft, and Presto! Bellows screens were all the rage, and nothing else was possible, and immediately the Knocker screen supporters had to fall by the wayside. Gotham get rich: John Warren got nothing out of it.

Rotary screens not so very long ago were deemed impossible on paper machines — well enough for sulphite, but keep them off the machines. Now its rotary screens on paper machines, and only a few objectors.

Shaking frames — our world rocked between the form of shaking mechanism some 20 years ago and has continued until now, when we begin to see that no shake at all may be the eventual outcome of the controversy.

I well recall one eminent engineer who proved to papermakers that the old shake, that had its stand starting at the floor, passed the paper stock in its movement from low to high, back to low again, thus making the sheet thicker on the edges of the wire. He brought out a patent that made the wire practically horizontal in its movement. I developed a roller shake that had to be horizontal as long as the rollers would last. Another brought out a vibratory shake that swung from high to low to high, making the sheet thicker at the middle. You smile now because neither idea was right or wrong, and we agree that it is immaterial, and perhaps we are at the last of shaking frames anyway.

Speeds changes — you must smile to think of what we deemed necessary 25 years ago, tons and tons of cast iron step pulleys and cones, conical belt drives, etc., all now gone, superseded by "complete omission," a variable speed engine or motor is all that is required, and possibly we have arrived at a point where separate motors will be hereafter used for each separate part of the machine. But don't let us forget that the first machine to operate at 1,000 feet has a much despised but well built Marshall drive on it.

Let me take save-alls under a wire, wood, galvanized, copper or what not, they had to be used. The wire would fill with stuff dropping through the wire or from Heaven itself. We could not believe the simple fact that water that went once through a wire on its forward movement would surely after thus being strained go through the wire on its return, and yet today no one would think of going back to save-alls for white water under the wire. If he has ever run a machine without them.

I have said enough to show you that we are progressing about as fast as we get rid of our impedimenta, our unnecessary things, and our conclusions nowadays want to be modified a little in view of the facts that 20-30 years ago we were staunch adherents of all of these four illustrations each being on one side or the other of the controversies.

Let all of this show us that none of us knows all there is of paper making, and in all probability solution will come from unexpected sources.

The present widely advertised excellent contributions to the controversy of Speed vs Width recall the days 18 to 20 years ago when the trade divided itself over Width vs Speed. Curious, is it not, that the present day controversy calls the 164" machine the narrow machine and over 200" a wide machine, whereas in 1900 to 1905 the 164" was the huge, elephantine monstrosity that was to be introduced. George Parks, of blessed memory, said up to his dying day that he preferred 86" to 90" machines making one roll of news to the wider machines, and yet the standard machine in our own factories is the 164" wire. Have it with whatever length of wire you please, as many presses and dryers as you will, the 164" standard we maintain in order to expedite our manufacturing.

So history but repeats itself, only our monster of 1900 has become the common size, and there is a new monster.

These contributions or essays are very interesting, and I refrain from saying amusing, in the present controversy, and as I must speak of them I pray you to believe I mean no reflection whatsoever upon the authors, because you and I are in the same rut in regard to many things, and it is easier to see the motes in your brother's eye than in your own, and none of us are logical at all times, and sometimes I think in regard to the papermaking game that Shakespeare's Puck" has the best job, as he sits off and views my errors and yours, and your worries and my worries over things, mostly because we don't understand them, and he says, "What fools ye mortals be."

Let me illustrate the difficulties some of the recent authors labor under and honestly support their contentions with heart and soul. The first prize recently granted to the writer of an article on Speed vs Width makes a comparison between a 158" machine making 80 tons daily and a 234" making 72 tons, and bases his argument apparently on this comparison.

What a faulty conclusion one must reach, when the facts are, that 158" machines do not as yet make 80 tons daily, and 72 tons for a 234" would be a huge joke. I have a 204" machine running at 750 feet making 85 tons daily and has made 90 tons, and if anyone will give me an order for a 234" machine and it doesn't make over 100 tons daily I will feel so badly disappointed that I will ask the party never to let me build another machine for him.

Many writers in these articles seem to agree that 600 to 650 is the speed where wire, presses and winders will permit paper to be made without waste, etc. My friends, in 1897 the majority of papermakers said the same thing, their limit of speed was about 400 because you could not take care of the paper made, and 100" the limit in width because the winder shaft on the old single drum winder would spring and the rolls run together. All of this was true, positively true, but then John Warren came to us with his 2 drum winder idea, and both the speed and width questions were solved at one crack so far as taking care of the paper was concerned, and the same old machine trotted right up to 500 feet per minute. I cite this because one man says 1,000 feet is impracticable because one winder will not take care of the paper, and he is just where we all were in 1895.

Another man speaks of power as 2½ H.P. per inch of trim on slow speeds, and 4 H.P. per inch of trim on a flyer, as he calls it. Now the facts are, we are operating daily a machine 112'' wire at 1,000 feet per minute and taking 256 H.P., or just about 3 H.P. per inch of trim, and this is measured by electrical instruments and no doubt about the readings, and I submit this machine is some "flyer."

We have a 164'' machine running about 800 feet taking 2¼ H.P. per inch of trim, and a machine 145'' running at 600 feet taking less than 1-3 H.P. per inch of trim. I cite these as mere illustrations of men befogging the situation and themselves by careless statements, not being in touch with the whole field.

One word more to emphasize my point: One writer of great and goodly reputation, for whom I have the highest regard, says that "in case of a level wire running 600 feet per minute the stock could not possibly be delivered on the wire at any such rate and the result would be that the wire would be jerked out from under the fibres before they settled into formation, standing the fibres all on end, making a bad looking sheet and causing many breaks." And yet we not only run machines level at 600 feet but the machine illustrated in the bulletin distributed here shows the machine operating at 1,000 feet and the wire level inclined upward.

I could go on for hours showing how little hope the average human has in his breast, but enough to show the papermakers are inclined to be pessimistic and help to clog the very progress they desire.

Now let me illustrate my own side of the question of progress. Recently I had occasion to review the matter of the deckle washing box, and I found beginning in 1889, with a sheet of brass on the inside of the wheel, we made sixteen different steps during 30 years before we developed a box that would wash a deckle strap and prevent the breaking down of the sheet from slugs from this particular source, sixteen positive efforts, and each time an improvement, and yet we are no more stupid than other people. We got the box when we finally "got it", and that's very largely what I feel about all these points in connection with which men use that fearful phrase, "it can't be done". "It can't be done" has wrecked more than one life and industry.

Now my No. 1 prophecy — I prophesy that we will see paper, I mean the good commercial article, made at 1,500 and 2,000 feet per minute, not this year or next perhaps, but not so far off but that the majority here will live to see it.

Who that has been at Wausau Sulphate Fibre Co. ever expected to live to see 1,000 feet made, but it is being made and no guess work nor uncertainty about it. We have learned many things from this experience and are engaged in so bettering every detail in our machines that we believe, truly believe, that we will exceed 1,000 feet within 15 months by a substantial amount.

I must be pardoned if I seem to be advertising my own machines. They are the ones I know and must speak of.

My beliefs are

(1) The papermaking world is simply beginning to understand fully the fundamentals of the art, and the possibilities of development.

(2) The repeated efforts of machine builders to improve during the last 30 years are beginning to bring many parts in a paper machine to a satisfactory operating condition, and the improvements are continuing.

(3) There is somewhat less of the "can't be done" feeling among us.

(4) Experience at 1,000 feet has taught us definitely some things heretofore unknown.

(5) We are not at liberty at this moment to tell, of some startling innovations, fundamental in their nature, that I believe, will change papermaking within a short time.

(6) Our experience in developing high speed machines and the accomplishment of 1,000 feet has taught us that the points that papermakers have generally considered in the past as the crucial and essential points in obtaining high speeds are not those that will contribute to further increase in speed.

(7) The driving of a paper machine at any speed is now behind us. The electrical drive will operate at any speed, even if we can't do it with our bevel gear drive, which please do not forget is the only drive yet running at 1,000 feet.

(8) We have learned a lot about wires and the shaking thereof or the lack of shaking.

(9) Reeling of paper has no terrors.

(10) Winding of paper is not a problem.

(11) And in conclusion, so many problems have individually been solved of late that we believe that we can soon arrange a combination of experiences in one machine that will eclipse all other records up to this date.

(12) We are now engaged in putting refinement and precision into our paper machines not required heretofore, which actually up to 700 to 900 feet would have been over refinement and we are preparing for some really high speeds. We hope to attain them promptly, but if we do not we will keep improving and hustling until we do.

Prophecy No. 2.

Regarding Speed vs Width. — I want to state that my position has been for 30 years, and is now stronger than ever, that width and speed can be combined in one machine, and believe that is the machine of the future. Remember, 30 years ago 86'' was the wide machine; 15 years ago the 160'' was the wide machine; and 10 years hence at 234'' or wider may be the most desirable from both viewpoints of Speed and Width.

NEW OFFICERS OF THE C. P. & P. A.

After the items of business in connection with the reports had been disposed of, the meeting proceeded to the election of officers for the coming year. The unanimous choice for president was Percy B. Wilson, Vice-president of the Spanish River Pulp & Paper Mills, Ltd., and for Vice-president, George M. McKee, General manager of the Donnacona Pulp and Paper Co. Ltd. and for the past year chairman of the newsprint section.

News From Europe

By Dr. PAUL BARTHOLOW, New York.

Prices of Wood Pulp in Austria.

If it were not for the "chaos," as Austrians call it, paper, wood pulp, and boards would be very cheap in Austria. But smuggling and illicit trading have raised the price of wood from 700-800 crowns per cubic meter at the forest, to 1,000 and 1,200 crowns. Even at that price (an Austrian crown fetches 6 Swiss centimes) wood might be cheap, but it is difficult to export it. Prices of boards are from 15-16 crowns per kilogram. Export prices are 3-5 crowns higher. Wood cellulose costs 9-10 crowns at the mill; delivered in the stores it costs 50 per cent more. In the meantime the position of the mills is almost desperate. Raw materials cost three or four times as much as they did during the war, for many of these materials must be imported from abroad, where prices are far beyond the ability of many Austrian mills to pay, and much above the fixed prices of the Austrian government.—"Wochenblatt Fur Papierfabrikation," November 27, 1920.

Obstacles to Trade in France.

The business of paper is conducted in France with a minimum of buying, yet even this small amount is regarded with concern, for example — "M. Valois, general secretary, expounded the difficulties in which publishers found themselves in view of the prices of paper which are four times as high as they were in 1914, when the price of current books has only doubled; here is then a great peril for French works. In this grave situation, must we import paper from countries, where exchange is favorable to us, in order to lower automatically the prices of French papers? This is an attractive solution, but it offers a serious danger. If we supply ourselves exclusively in Germany, we will soon put French mills in a position where they will be compelled to close down"—Courrier du Livre, December, 1920. Similarly, it is said: "If we supply ourselves with paper from Germany, we will kill the French mills."—Le Papier, December, 1920.

(The moral of this is not hard to discover. Most men are desirous of making money, and will buy where commodities are cheapest. Commerce is built up on the selling of good material combined with skilful workmanship. In their all-embracing patriotism, French dealers ignore the first essential thing—production).

The Paper Yarn Industry in Germany.

The position of the paper yarn industry has been favorably influenced by the activity which began in the home market during October. One of the reasons given for this activity is the decline in exchange. The demand for twine of all sizes was especially keen, so that production hardly kept pace with it. Besides twine, the buying included other packing materials, while colored yarns for the manufacture of carpets were also sought. Foreign demand has been well above normal; the English, in particular, have been purchasers to an increasing extent of paper yarns and paper yarn products, which the British industry sends in either the finished or raw state to the American market. The English demand extends especially to yarns for carpet manufacture; these yarns are mixed with pure textile fibres and re-manufactured in large quantities as mixed yarn carpets, like the German textilose carpets. There is considerable buying of these carpets of mixed yarns which produce remarkably fine and pleasing grades. Recently the American market has endeavored to grasp this business opportunity, in view of the interest of the consumer in carpets as well as other paper yarn products. — "Papier-Markt." December 10, 1920.

Water Power and its Utilization in France.

It is estimated that the total water power of France amounts to between eight and nine million horse power, of which more than 50 per cent. is confined to the mountainous regions of the South East. France has doubled its water power within five years. In 1913 only 750,000 H.P., were utilized; but recently, despite incalculable difficulties, enormous progress in this direction has been made. The following indications are proof: Installations from 1913-1918, 450,000 H.P.; in 1919, $125,000 H.P.; in prospect for 1920-1921, 275,000 H.P. Total, 850,000 H.P.

Experts figure that a water power of 1,500,000 H.P. installation really corresponds to an actual force of 850,000 H.P.

It is stated that every installation of 1000 H.P. is equivalent to a saving of 5,000 tons of coal a year.—"Le Papier," December 1920.

The Fine Work of the Hollander.

(In this connection see W. B. Campbell's article in the Pulp & Paper Magazine for Jan. 20, 1921).

In Europe, where the hollander is used perhaps more widely than it is here, a great many practical observation on its working have lately appeared. The following is a brief summary of two papers by practical experts: "Although the actual sharpness of the knives of the hollander is a primary condition of the quality of the pulp produced, it does not stand first in order of importance. Before the introduction of the hollander the stuff was beaten and crushed in a stone vat with a stamper. The stock was reduced to the desired fineness not by a process of cutting, but by crushing the fibrous mass, or the indivdual fibres. That the paper produced from this greasy pulp was superior in solidity and strength, is well known, and, today, any one who for special reasons is desirous of approaching this quality, must endeavor to make the work of the hollander approximate as closely as possible to this crushing effect. That this is not accomplished by the newer machines and by sharp cutting edges is certain. In fact the new machines have failed both in the quality, and, strange, to say in the relative quantity of the pulp produced. For example if the screw of a pair of scissors is loosened, a thread placed between them, is only torn; if, on the other hand, the scissors are tightened, a smooth cut is the result. It appears from this, that the rapidity of the cut changes the effect, and that, likewise, the separation of the cutting surfaces tears and bruises the fibres. Fibres usually have the form of a roll and, in extreme cases can be cut, cross-wise or split longitudinally. The first occurs with a sharp hollander knife; by means of this rapid shaving of the fibres, a "pink" pulp is obtained; the longitudinal cut is due to the action of broad, crushing blades, or crushing surfaces for example stone rolls), which act like the stamper that is, by rubbing, friction, etc., producing the "greasy" pulp. The pink pulp has a minimum surface; the greasy a maximum surface; the first, consequently, rapidly loses its water on the machine, the second only with great difficulty. These difficulties, if well understood, become matters of anxious consideration when it is a question of changing the quality of the pulp, that is, from a pulp intended for print papers to a pulp intended for papers of finer quality.—"Papier-Markt," November 20, 1920.

British Trade News

(From Our London Correspondent).

London, Jan. 3, 1921.

Caldwell's Paper Mill Co., Ltd., of Inverkeithing, have purchased the shares of the Inveresk Paper Mills, at Musselborough. The fusion of these two important mills augurs well for the future, as they hold a high reputation as Scottish producers of papers. The purchase price is about £375,000. The Inveresk mill turned over a profit of £130,000 last year, and the fusion means seven paper-making machines running now on fine writings, printing, art and other papers, while Caldwell's mill is notable for grease proof, bank papers, printings, and writings. Mr. William Harrison is a moving figure in these concerns.

Bought Canadian Pulp Mill.

Speaking at the annual meeting of the Amalgamated Press, Ltd., held in London, Sir George Sutton, Bart., the President said: "You will be pleased to know that the Imperial Paper Mills—the second largest paper mill in this country—in which you have a controlling interest, are doing exceedingly well. During the year it was considered advisable to acquire timber limits for the supply of raw material essential to the paper mills and a two-thirds's interest was purchased in the well-known Gulf Pulp and Paper Coy., situated in the Province of Quebec. My colleague, Mr. Linforth, the vice-chairman of the company, went to Canada last summer to carry through this transaction, which we believe to be a valuable and necessary acquisition to the company. In this connection, the Imperial Paper Mills made an issue of £800,000 seven-and-a-half 15-year debenture. The issue was highly successful and owing to the large number of subscriptions received, the lists had to be closed the day after they were opened, practically the whole of the issue being covered in the first day." The Amalgamated Press is a very successful concern: they publish "Answers," "Home Chat," the "London Magazine," the "Picture Show," and numerous other weekly and monthly periodicals.

German Pulp.

Judging by a recent address delivered by Mr. A. P. Burt of the Paper Bag Mnufacturers' Association, to the members of the Paper, Printing and allied trades, he is in favor of encouraging dealings with Germans in paper and pulp. Now, first of all, it must be explained that the German Mark used to be worth 24 cents (1 s.) but now its value is equal to 2 cents (1d.). Mr. Burt has told the trade that what was wanted was increased production and reduced cost. They were, however, getting the opposite. "As Germany must export," he continued, "why not let us take from her such goods as we must import, and especially those which, speaking generally, are imported from neutrals or the U. S. A., of which an excellent example connected with our own trade is wood pulp. Let Germany send us much wood pulp as she possibly can and we will be glad to take it at the lowest price at which she is prepared to sell it. But the Germans are not anxious to sell their wood pulp as shown by the fact that they ask almost as much per ton for wood pulp as for corresponding paper made from it." Here we have an Englishman wanting something for nothing from our late enemy. He is afraid of German competition, because the Teuton prefers dumping the British market with paper, as it pays better just at the moment.

German Newsprint.

Mr. Burt, however, gave some interesting information on the cost of production in German paper mills. Newsprint, he mentioned, cost 2,500 marks per ton to produce and it was sold in the domestic market for 8,000 marks per ton, which is equal to 7½ cents per lb. delivered in London. From the German point of view this is high. No wonder, therefore, that the placing of German paper on the market in England at a price, which no British mill man could produce it, caused some uneasiness in many circles of the industry. Wages in Germany are not so high as in the British and Canadian mills. Mr. Burt, in the circumstances, does not mind what the German mills do with his raw material—a most important element in manufacture—so long as he does not go into the foreign market to sell the finished article at a lower price than the British or Canadian. It is a case of "Every dog his own bone." German wages to-day are from 250 marks to 350 marks a week for 2-shift men, i.e., about 20 s. to 30 s. a week. Wages in England are four times these rates, and in some cases five or six times, and there is also a 3-shift principle. The fact seems to be overlooked by many that Germany is doing all in her power to get back into foreign markets and she is adopting her old scheme of underselling the domestic supply. To get into foreign markets raw materials must be conserved by her though she can buy cheaper at the rate of exchange, than the British or American, and she can produce cheaper.

British Paper Situation.

Dullness still prevails in the British paper industry. Slackness has set in among the mills of Midlothian and in one, where about 400 hands are employed, most of the workers are on a weekly shift of 3 days, while in another mill short time is being introduced this week. Many other mills throughout the United Kingdom are also giving short time their consideration and in some cases millowners not directly engaged in the manufacture of newsprint have turned their attention to it in order to give employment and keep the mill machinery running. Some of the mill order books do not present a healthy appearance and the depression prevailing is, naturally, reflected in the sales of wood pulp, sellers of which are going through a very trying time.

"I am not downhearted," said a prominent paperman to me the other day. "There is a good time coming and things will reach their own level by degrees. We are suffering from war's re-action and as soon as the money markets of the world are stabilized and the rates of exchange placed on a better footing, we may then begin to look around for more business." He added that it was a question of "lying low," but that he mentioned "takes money to do so."

British pulp prices show no change, neither does newsprint. Wrapping papers are easier. Other classes of papers are firm. "Whitaker's Almanac," a well-known publication in London, is published on a light thin printing paper at a cost of £88 a ton this year, compared with £18 a ton in 1914.

Notelets.

Mills making white printing paper are, in many cases, turning out newsprint to keep things going.

Good supplies of groundwood have reached the United Kingdom during the past month.

The new year opened with several new papers in London. One is the "Daily Summary." It all means more newsprint.

The Bury Paper-making Company, Ltd., in Lancashire, in their report for the year ending Nov. 27, last show a profitable financial year. The gross profit is £40,266 15 s. 4 d., after deducting taxes, etc., and the balance is £32,672 16 s. 6 d. A dividend of 10 per cent on preference shares, less tax, is declared and 15 percent, plus bonus of 10 per cent, free of tax, on the ordinary shares, is recommended. The balance carried over is £19,575 15 s. 6 d.

Scottish printers report from Edinburgh: "...Faced by high paper costs and the drain of inflated wages, the smaller masters in the trade are, to all appearances, being threatened with elimination."

Mr. W. H. Sherriff, of the Hodge Sherriff Paper Co., who is on a visit to England, has burst a blood vessel. He is doing well.

Messrs. A. E. Reed & Co., Ltd., have presented a fine club at Tovil for workman and their lady friends.

THE OUTLOOK FOR THE PAPER INDUSTRY.

Following are the opinions of George Chahoon, jr., president of the Laurentide Company on the outlook for the coming year, in the newsprint market; of C. Howard Smith, president of the Howard Smith Paper Mills on the book and high grade paper outlook, and of J. H. A. Acer, head of J. H. A. Acer and Co., on the kraft paper outlook.

The opinions cover the three large fields of business engaged in by the pulp and paper companies of Canada, and together can be consolidated a general summing up of the industry's future insofar as experts each in his line can judge it. The opinions are based on present indications, and do not take into consideration unforseen disaster of any kind that might affect industry as a whole or in part.

Newsprint.

Mr. Chahoon says: The demand for this commodity has been more uniform than for any other commodity and reflects very prosperous conditions in the newspaper industry. Prices for paper made by the large producers are at the maximum. No price adjustment has been heard of and none is possible until after the first quarter of the year. There is nothing in the general outlook that would alter the belief that the newsprint industry is in a very healthy condition due to the fact that the supply and demand are very closely balanced. Whatever may happen in the future no readjustment in newsprint prices will be out of proportion to the readjustment in prices of all commodities that go into the making of newsprint.

High Grade Paper.

Mr. Smith says: There has been a lull in the high grade and book paper market, and some of the mills have closed down, considering it an opportune time to do overhauling. As far as our plants are concerned, they are working at seventy-five per cent capacity with business picking up sufficiently to warrant the belief that within a month it will be again normal. As far as we can see, with readjustment at both ends, the mills making our grades of paper should average out in 1921 on a par with 1920.

Kraft Paper.

Mr. Acer says: These who use packing and wrapping paper, etc., have still supplies on hand and these must be worked off before there can be any return to normal business with the kraft paper mills. The mills have no stocks, and are working to fill incoming orders. When the present supplies in the hands of the consumer are worked off will depend on the increase in business in all lines of commodities, and that part is hard to predict. However, lately we have noticed a slightly better demand although world wide it is still dull.

WHY THE SPOT MARKET COLLAPSED.

The financial page of a Montreal paper has the following interesting comment on the cost of newsprint manufacture and the turn of the spot market:

Speaking generally of the coming year, the head of the Laurentide Company does not think costs of newsprint companies will be much reduced. The two big items, wood and labor, are not likely to fluctuate much. Large companies usually have their wood supplies under way about two years in advance of actual using, so that today's manufacturing is from wood cut nearly a couple of years ago, and wood cut today will be used over a year from now. So long as the market holds, it is not likely that companies will make an effort to reduce wages. In other lines of costs there will possibly be a reduction, but the effect will be more for the future than for the present.

In reference to the so-called spot market, about which there has been much talk, and which appears to have dried up, the explanation is simple. While large consumers of newsprint were being regularly supplied as per their contracts, there was some fear of a shortage or higher prices, so that many of the larger enterprises were buying in odd quantities on the side, and storing it for a possible rainy day. When they were satisfied that the peak of prices was reached, or when sufficient had been accumulated to overcome that fear, this sort of demand ceased. With contract paper coming in regularly, it was not the part of wisdom to store too much spot paper at the prices some anxious buyers were paying.

BITS FROM BELGO.

The new grinder room that will house the new magazine grinders is completed and we are expecting the machinery at an early date. When the new mill will be ready for operation we cannot say yet but unless delays are experienced in deliveries it ought to be about April 1st.

The First Aid room reports for December, 487 dressings and no infection.—No comments!

During the first days of January the Mill and Office were filled with people having smiles on. After due investigation it was found out that the good old French-Canadian custom of wishing a happy New Year was the cause.—Few were blessed with a few wishes, others with plenty! — the boys of course. "Smack". As an example:—

—"Say You!" you haven't wished me a happy New Year yet," said Tommy.

"Well, a happy New Year Tom, but dont kiss me or there will be a fight! "Screams of laughter from the rear! (On Belgo hill going up for lunch Jan, 4th 1924).

The M.A.A.A. Reds defeated the Laurentide A.A.A. basketball team of Grand Mere 22 to 16 Saturday night. The game was played in the M.A.A.A. gym. and was the attraction for a large attendance, who saw a hard and well-fought game. The visitors were the same team which had defeated the Reds at Grand Mere a week before in a keen overtime contest. On the Laurentide team were:—Swihart, Marguard, Johnson, Blinco and Braydon.

PULP AND PAPER NEWS

The Western Sales Book Company, Limited, has been organized and been granted a Canadian charter, to take over the Winnipeg Sales Book Company and the western sales book businesses of the F. N. Burt Company of Toronto and the Appleford Counter Check Book Co. of Hamilton, Ont. The new concern is putting in a modern sales book plant sufficient to provide for the growing demands of the west and expects to begin operations about Feb. 1. Mr. Theo. K. Pickering, formerly of the Appleford Company, is president and general manager of the Western Company which is capitalized at $350,000, of which $100,000 is preferred and $250,000 is common stock. The company is authorized to carry on business as printers, lithographers, manufacturers of books, counter check books, etc.

Mr. N. L. Martin, secretary of the Canadian Paper Trade Association, Toronto, has been elected a director of the Royal Toronto Athletic Club, an organization which is projecting a big club building on Bay Street.

Practically all the public bodies and institutions in Toronto were represented at the funeral of the late Sir William Gage, founder and head of W. J. Gage & Co. Service was held at the family residence on Davenport Road after which the remains were interred at Mount Pleasant Cemetery. The Governor-General, from whom a telegram of sympathy was received, was represented at the funeral by Col. Bishop. The Lieutenant-Governor of Ontario was present in person and many other men prominent in civic and business circles in the city gathered to pay their last tribute of respect to one who was universally esteemed.

Hon. N. W. Rowell, K.C., has been retained as counsel for the Ontario Government in the suit against the Shevlin-Clark Lumber Company, for money alleged to be due the Government for unpaid dues on timber limits investigation being conducted by the Riddel-Latchford Commission.

Mr. John M. Imrie, formerly manager of the Canadian Daily Newspaper Association, who started a morning paper in Hamilton, Ont., has joined the organization of William Southam & Sons, Limited. His work will be of an advisory and executive nature in connection with the various companies and in the meantime he will be associated with the Hamilton Spectator.

Lieut.-Col. T. Gibson ,Vice-President of the Spanish River Pulp and Paper Mills, Limited, was elected president of the Aero Club at its annual meeting in Toronto.

Hon. George P. Graham, president, and the staff of the Brockville Recorder, were tendered a complimentary banquet by the Brockville Board of Trade on January 18th in honor of the newspaper's centenary. On behalf of the citizens of the town Hon. Mr. Graham was presented with a silver loving cup. Col. George H. Ham, of the press department of the C. P. R. and Mr. P. D. Ross, of Ottawa, President of the Canadian Daily Newspaper Association, were the chief speakers.

Lieut.-Col. T. Gibson left Toronto on Thursday night last for New York to attend a directors meeting of the Lake Superior Corporation, of which he is general counsel. He will also attend a meeting of the directors of the Spanish River Pulp and Paper Mills, Ltd., at Montreal.

Representatives of certain publishing houses in Toronto asked the Ontario Government a few days ago for relief from losses incurred in the publication of school text books. It is understood that the Government was sympathetic, but took the view that there was a serious principle involved in interfering with existing contracts.

Mr. A. G. Pounsford, general manager of the Provincial Paper Mills, Limited, Port Arthur, was in Toronto last week. Before returning north, Mr. Pounsford will visit Neenah, the centre of the pulp and paper industry in Wisconsin.

Barrister Charles McCrea, ex-M.P.P. and G. B. Gray, of pulp and paper fame, are Sudbury visitors in Toronto.

To carry on business as proprietors and publishers of magazines, newspapers and to engage in a general printing, publishing and lithographing business, Press Service Corporation, Limited, has been granted a Dominion charter, with the chief place of business Toronto. The capital stock is $250,000. Montreal barristers are the incorporators.

Mr. T. H. Weaver, of the Toronto Type Foundry, Limited, Toronto, is stated to be in the market for a small newsprint mill for one of his clients.

Among those from Toronto who attended the annual convention of the Canadian Pulp and Paper Association in, Montreal were Mr. I. H. Weldon, Mr. Duncan and Mr. Piper of the Provincial Paper Mills, Limited, Mr. George Carruthers of the Interlake Tissue Mills, Limited, and Mr. C. Nelson Gain and Mr. Harry Muir of the Don Valley Paper Mills.

Mr. S. A. Gibson, who has been identified with the Ingersoll post office for 31 years has received the appointment of postmaster in succession to his late father. He is a brother of Lieut.-Col. Gibson and Mr. J. G. Gibson, Vice-President and secretary, respectively of the Spanish River Pulp and Paper Mills, Limited.

Mr. A. T. Willgress, who has been Provincial King's Printer for several years, has been appointed Librarian, at the Ontario Parliament Buildings, to succeed Mr. Pardoe who is being superannuated and Major C. W. James, secretary to the Minister of Education, is slated to become Purchasing Agent and King's Printer combined.

President J. T. Carey, of the United Brotherhood, in a statement, made it clear that the two organizations intended to share in some way in what he termed the "fairly decent profits" of the paper manufacturers of the continent. Their wage demand would be based on the assumption that manufacturers can afford to pay an increase upon wages fixed in May 1920, without passing the increase on to the consumer. He pointed out that the increase in the price of paper in two years had been 200 per cent. while the wage earner had not benefited to anything like that extent.

UNITED STATES NOTES

W. P. Taylor, son of S. P. Taylor, California's first paper manufacturer, is planning to erect two mills at San Francisco for the manufacture of pulp for cardboard from rice hulls. Mr. Taylor has devised a means of converting this waste material into a solid "chip" board for use in box making. California concerns have been paying $12 a ton daily to have rice hulls, considered useless, burned, says Mr. Taylor, who claims that he demonstrated the practicability of using them for paper in a recent experiment at a large paper mill in Stockton. Mr. Taylor asserts he has shown that pulp for box board can easily be made from the rice hulls at an expense far below the cost of burning them.

Persons employed in the paper and printing trades in Greater New York, Jan. 1, 1921, numbered but 9,596 as against 16,029 on January 1st, 1920. These figures are included in an industrial survey of New York State just completed by Dr. David F. Flynn, representative of the State and Federal labor departments. Outside of Greater New York the group listed in the report under the head of lumber paper and paper products, showed a total of 134,000 persons at work, January 1, 1921, as compared with 158,000 for the corresponding day of 1920. 645,043, or 34.91 per cent of the wage earners of the State are shown by the survey to have been out of employment at the beginning of the present year.

Winthrop M. Crane, son of the late Winthrop Murray Crane, one time United States Senator, was elected a director of the Berkshire Life Insurance Co., last Thursday to succeed his father. Mr. Crane became head of the Crane family's paper manufacturing interest at Dalton several months ago following the death of the ex-Senator.

The stockholders of the North American Pulp and Paper Company will meet on February 8 to vote on a proposal to authorize its trustees to terminate their trust and sell its assets for an amount equivalent to at least $6 cash in American funds for a share of the company's common stock after redemption of its preferred issue. Holders of ten shares of its common stock will have the right to exchange them for a share of preferred stock and four shares of common stock, of $10 par value of the Saguenay Pulp and Power Company.

Writing last week to the American Forestry Association in response to a request asking that he name the tree best representing America, President Wilson declared that he found himself unable to make a choice because American forests are so rich with infinite variety.

The New York State Publishers' Association, whose membership includes the owners of fifty-two daily newspapers, adopted resolutions at Albany last week placing themselves on record as opposed to any reduction of hours in the mechanical departments of their papers. This action resulted from an announcement by officials of the Stereotypers and Electrotypers' Union that, beginning May 1, the union would demand a 44-hour week, a reduction of four hours from the present working week. This demand of the union has also roused to action employers of job and commercial printers throughout the middle West.

The St. Louis branch of the Printers' League of America has just issued a call for a meeting to be held at St. Louis, February 3, for the purpose of organizing a fight on the 44-hour week movement.

Albert F. Hagar, president and general manager of the Hagar Strawboard & Paper Company of Xenia, Ohio, died suddenly last week, the victim of a heart stroke, at his offices, No. 60 Wall street, New York city.

A fight on the Federal Water Power Act is being instituted by the State of New York, whose Attorney-General, Charles D. Newton, has filed objections to the applications made by twelve Western New York associations and corporations for leave to divert and utilize through the construction of dams, the waters of the St. Lawrence and Niagara Rivers for power purposes. The objections will be argued before the Federal Commission at a hearing in Washington, January 24. The Attorney General takes the position that the province of the Federal Government relative to these waters was limited to taking such steps with respect to the use of the water power purposes and with respect to dams and structures to be erected as will insure that they do not operate to impair the navigability of the waters.

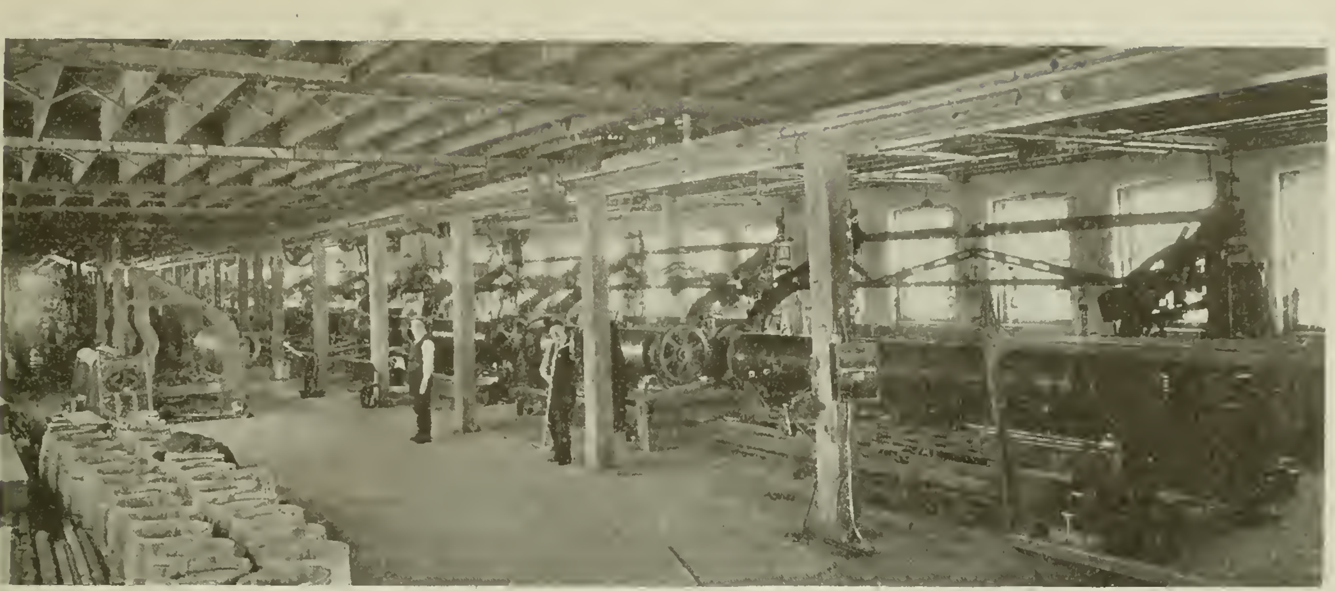
Col. Robert M. Thompson, of New York City, was reelected president of the New York State Forestry Association at a meeting held in Albany, last Friday. J. R. Simmons, of Syracuse, was elected secretary-treasurer. Included among the twenty vice-presidents were Elihu Root, Franklin D. Roosevelt, former Ass't. Secretary of the Navy, and New York State Conservation Commissioner George D. Pratt.

The capital stock of the Eastern Pulp Company, Limited, has been increased by Letters Patent from $500,000 to $750,000.

Fire, which broke out on the premises of the Winchester Press, at Winchester, Ont., wrought damages to the extent of $25,000 to the plant and adjoining premises.

The mill of the Kaministiquia Pulp and Paper Co. at Port Arthur has been completed. Production of ground wood pulp will commence on January 24th.

Sections of the annual convention of the Associated Sulphite and Paper Mill Workers and the International Brotherhood of Papermakers, the first to take place in Canada, were held in Toronto during the week and at the present writing the organizations are engaged in endeavoring to secure a uniform and satisfactory wage schedule in all American centres of paper production. At the paper makers convention, Mr. Tom Moore, President of the Dominion Trades and Labor Congress, declared that organized Labor would move to safeguard existing wage standards. Labor unions, with the backing of the Dominion Trades and Labor Congress, would attempt by peaceful means to get justice. He emphasized the importance of labor unions doing their part in assisting the country during the period of reconstruction.



WHERE "CAPITAL WIRES" ARE MADE.

The photograph on this page is a view of the wire weaving shop of the CAPITAL WIRE CLOTH and MANUFACTURING COMPANY, LIMITED, Ottawa, Canada. They manufacture brass and phosphor bronze wire cloth for the Canadian Pulp and Paper trade exclusively.

This concern was established in 1912 and turned out the first finished product in December of that year, when they had two looms in operation. At the present time there are sixteen looms operating, with four more under construction.

Mr. J. R. Buchanan, President and Manager of the company, has been connected with the industry for over twenty-five years and comes from an old wire weaving family, his grandfather having woven the first Fourdrinier wire made in America, this being in Belleville, New Jersey, in 1848.

It is interesting to note the changes which have taken place in the industry from that date to the present time.

In 1850 the dimensions of the average Fourdrinier wire were 40 to 50 inches wide and twenty-five feet long, and the average speed of paper machines at that time was from twenty-five to fifty feet per minute.

Up to 1895 the demands upon the wire manufacturer were not great as it had not been difficult to keep pace with the normal changes in the paper manufacturing industry, but during this year the Speed Bug caught the industry and the Glens Falls Paper Mills Co., of Fort Edward, N.Y., opened up a new era in the trade by building a paper machine 110 inches wide using a sixty foot wire to run at a speed of four hundred and fifty feet per minute. It was claimed that this machine was twenty years ahead of the times and that conditions were not right to make such radical changes as this speed was unheard of and not believed possible. However, it was a success and ran at the specified speed making a very satisfactory sheet of paper.

From this time on changes in machine and clothing were rapid, and in 1897 a machine was built to take a wire 120 inches wide. The wire manufacturer was now filled with dismay as it meant radical changes in loom construction to weave a wire of this width, and some manufacturers went so far as to say that it could not be done. Today wires are being woven well over two hundred inches wide and the end is not yet.

To meet the ever increasing requirements of the modern paper making greyhounds it behooves the wire manufacturer to keep in close touch with the rapidly changing conditions and to adapt his equipment and process of manufacture promptly to meet these requirements.

The Capital Wire Cloth and Manuracturing Company Limited endeavors to acquaint themselves with the individual requirements of their trade and to build wires to meet the particular needs of their customers. That their policy is a success is evidenced by the modern up-to-date successful plant which they operate, and by the satisfactory performance of their wires under a great variety of operating conditions.

LA TUQUE WON FROM LAURENTIDE.

Grand'Mere, January 21.—La Tuque won the second game in the St. Maurice Valley Hockey League at the Shawinigan Falls rink Jan. 20, when they defeated Grand'Mere in a thrilling overtime contest by the score of 2 to 1.

The Teams were:

Grand'Mere (1).		La Tuque (2).
Maltais	goal	Duchene
Richardson	defence	Lacroix
Hayes	defence	Mongrain
McLaughlin	forward	Hughes
Roberts	forward	Kane
Hoffman	centre	McNaughton
Boyd	subs.	McNaughton
Richard	subs.	C. Goswell
Neville	subs.	F. Goswell
MacKinnon	subs.	Gillard
Lamirande	subs.	Breathwaite
Barrette	subs.	

The hockey team of the Brompton Pulp and Paper Co. is one of the four teams in the St. Francis Valley Hockey League. Twelve games are scheduled.

A successful series of hockey games is being played in Montreal. Most of the Montreal offices of pulp and paper companies have teams in the league.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, Jan. 22.—General conditions in the pulp and paper industry are unchanged. Prices for several lines of paper still exhibit a downward tendency and the market is in a very unsettled state. While there has been some improvement during the week in the volume of buying and the size of the orders, it appears to have been due to the sorting up process which has been prevailing in the job houses and print shops of late. In some cases, however, it is known that stocks are getting low and it is generally believed that buying will set in briskly within the next few weeks, although the feeling is general throughout the buying trade that quotations have not yet reached rock bottom. This is militating against big business in the pulp and paper industry. During the past few days several lines underwent a reduction, notably flat newsprint other than contract, and manila paper. Book paper manufacturers and jobbers have not yet got their prices down to a permanent basis and in the meantime deliveries are being made at the price prevailing at date of shipment. Book papers, ledgers and bonds are all being sold at a reduced prices but quotations are not stable and are liable to change from day to day. In the meantime it has not been possible to prepare anything like a representative price list of these lines of paper although it is likely that another week will see a general agreement as to what prices will prevail for the next couple of months for book, bonds and ledgers. While conditions generally are unsettled at the present time it is rare that one hears a note of pessimism concerning the future of the trade. This was borne out during the week by the reports presented at the annual meeting in Montreal of the Canadian Pulp and Paper Association at which comprehensive surveys of the trade generally were presented and which depicted the industry as being in a healthy condition and with a bright future in prospect.

PULP.—Dullness still characterizes the pulp market, although the general manufacturing conditions have been considerably improved of late. Water conditions are better and for the most part the mills are again grinding normally. Very few sales of ground wood are being made and the prevailing price is $80 to $90, although it is said that a few sales have been made at lower prices, than those mentioned. With many of the board and other mills closed down in the States sulphite is piling up and comparatively little is moving. There is also a tendency on the part of the paper mills to hold off buying in anticipation of still lower prices. Bleached sulphite is quoted at $140 and unbleached at $100.

TISSUES AND TOILETS.—The mills report a distinct improvement in business with increased orders of a larger size, from which it is gathered that stocks are getting down to a point where the dealers find it necessary to replenish. Raw stock for light weight papers is being freely offered, but manufacturers say that there has not been a sufficient easing off in the price of pulp to tempt them to buy. There have been no further reductions in prices and it is not anticipated that there will be for some little time. A meeting of light weight paper manufacturers is to be held in Montreal next week.

BOOKPAPERS.—While the prices of book papers have been reduced they are not yet down to a stable basis and shipments are being made at the price prevailing at date of shipment. Present prices are only tentative and until the mills find themselves in a position to figure on a non-changing pulp market and get at their cost of manufacture it is expected that there will be more or less of fluctuation before anything like a stable price list for book papers is prepared.

MANILAS.—The feature in the manila market this week was a drop of half a cent a pound on both "B" and "No. 1." The old prices on which the present reductions apply were: "B" manila, $9.50, $10.50 and $11.50. No. 1 manila, $11.50, $12.50 and $13.50, the figures are being for car lots, ton lots and less than ton lots respectively. The new prices came into effect on January 20th.

SHEET NEWS DOWN.—The old average price of ten cents a pound for sheet news was replaced last week by a slightly reduced price schedule. On one ton, and upwards the price now is 8½c. per pound: ¼ ton and up to one ton 9c.; less than ¼ ton 9¼c. all prices f.o.b. thirty days nearest shipping point.

NEW YORK MARKETS.

New York, January 22—(Special Correspondence)—There is no surface indication of any revival of activity in the paper market of worthwhile character. Demand from most consuming quarters continues limited; buyers are operating only against immediate requirements, and, aside from contract business, there is little stirring in the trade. Notwithstanding the tone of the market seems to be daily gaining strength. Perhaps this is largely due to the confident feeling possessed by manufacturers and merchants that the paper situation will not long remain in its prevailing condition, but there are other causes for the firming tendency of the market. Inquiry from consuming sources is of a nature inferring that users of paper of most kinds either are in want of paper or expect to be in the near future, and that just as soon as matters in their own industries become more settled they will resume buying of paper in something closer to normal volume. It is plainly apparent that business in many lines is steadily picking up after the period of depression, and it stands to reason that the paper trade will benefit by the increased activity in consuming industries in due time. The shoe manufacturing industry, for example, is rapidly getting back to normal production with plants in various parts of the country resuming operations, and it follows that demand for boxboard for the manufacture of shoe boxes should soon arise. Trade in almost every kind of wearing apparel is on the mend, and this should be reflected presently in the paper industry, because large amounts of paper and paper boards are consumed in the marketing of such merchandise.

The changes recorded in paper prices this week have in the main been in a downward direction. This

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is rather to be expected when one stops to review the circumstances. No broad alterations in quotations have been reported, yet lower prices have been noted on certain grades of paper. Some mills have reduced prices on fine papers. The lower qualities of bond papers are now available down to 17 to 18 cents a pound, whereas not so long ago about the cheapest price quoted on any grade was 25 cents. Most of the fine paper mills are unquestionably in need of orders. A majority are managing to get enough business to keep them running on short time schedule, but there is no concerted buying movement and the great bulk of orders coming in involve light amounts of paper.

Wrappings are quoted lower. A leading producer of kraft wrapping is reported to have reduced quotations on No. 1 stock to less than 10 cents per pound, and other manufacturers have necessarily fallen in line and reduced prices in proportion. Jute wrappings are reported at around 11 to 12 cents for No. 1 quality, while butchers' wrapping is available at 7 cents and less. Tissues are holding steady at the reduced levels reported several weeks ago, but are sought merely in routine fashion.

There is no change in the newsprint situation. Contract business constitutes the bulk of activity in the market, and there is a firm tone to contract quotations, whereas prices on spot shipments are rather easy. It is understood on high authority that several of the leading manufacturers of news have contracted for practically their entire output for 1921 at the prices announced just prior to New Year's, and those concerns which are making commitments only for limited periods are said to have contracted for all the tonnage they are willing to dispose of at present. Prices on spot newsprint rule at around 7 to 7.50 cents a pound at domestic mills, and it is reported that some lots of foreign print paper are being sold at under 7 cents.

The board market is characterized by a little more activity. The feature this week has been the expansion of demand for chip board, it being stated that mills in a number of cases have booked orders calling for sizable amounts of chip board. Quotations continue at $50, or a bit lower, per ton at mills for plain chip and around $55 for filled news board.

GROUND WOOD.—Slightly lower prices are reported prevailing on mechanical pulp. Sales have been recorded down to $80 for domestic ground wood of prime quality, and while producers are said to be asking higher prices for large tonnage, it is nevertheless a rather easy matter for buyers to acquire small quantities at this figure, and possibly for less. The market tone is not as strong as it was a short while back, still it cannot be said that there is any unusual show of weakness. Sellers of pulp are not pressing their wares on the market, realizing that consumers are not in a buying frame of mind at the moment and that moment and that the best policy for them to pursue is that of holding aloof pending a revival of buying interest. Imported ground wood of No. 1 quality continues to be held at around $80 a ton ex the dock, and is reported finding some takers at this basis.

CHEMICAL PULP.—Recessions in prices on most grades of chemical wood pulp have occurred this week, due more to the continued absence of buyers from the market than to any other single cause. There have been sales of foreign unbleached sulphite of No. 1 quality down to around 6.25 cents ex dock, while foreign bleached sulphite is available at 9 cents and foreign kraft pulp at 5.25 cents. Domestic sulphite of newsprint grade is reported selling at $100 a ton at pulp mills and less, and domestic bleached sulphite is offered at 8 cents and domestic No. 1 kraft at less than 5 cents. In reality there is scarcely an established price basis on any grade of wood pulp. Current transactions involve such small quantities, as a rule, that not enough supply is moving in the open market to fix definite values. There are some "weak" sellers operating, as would be expected under present conditions, yet most dealers and importers are waiting out the market in the belief that better times are in store and that when papermakers increase their buying the prices desired will be readily obtainable.

Importations of pulp at this port this week included 1,600 bales from Trondhjem.

RAGS. A little broader demand for roofing rags appears to be the chief feature of the papermaking rag market. Demand for all grades continues narrow, there being no concerted buying movement affecting any description of stock, and buyers in a majority of instances are managing to fill their present wants through purchases at close to the lower edge of quoted values. Roofing is probably the one exception to these conditions. Several leading felt paper mills have been actively in the market this week and have absorbed enough supply to be creative of a firmer price tone in this class of rags, and about the lowest at which dealers will accept orders now is $1 per hundred pounds at shipping points for No. 1 roofing rags and 90 cents for No. 2 packing. Old whites are held in many quarters with a little more tightness, with repacked No. 1 whites quoted at 9.50 to 10 cents a pound and miscellaneous packing at around 7.50 cents. Thirds and blues are mainly neglected and are quotable at 3 cents for repacked and at about 2 cents for rough packing. New cuttings are in limited demand but are generally held at steady prices by dealers.

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PAPER STOCK.—Low qualities of old papers have strengthened in price to a considerable extent this week, due to buying by board mills in the near vicinity of New York. It is quite evident that only certain consumers are buying, yet those that have been in the market have stirred up matters sufficiently to send quotations up $2 to $3 a ton. No. 1 mixed papers are fetching 50 cents per hundred pounds f.o.b. New York and packers, seemingly without an exception, are firmly insistent on at least this price. Flat folded newspapers are bringing 65 cents a hundred, No. 1 container manilas 60 to 65 cents, and No. 1 overissue newspapers about $1 per hundred pounds. Old books and magazines are in better call also and are freely selling at 1.60 cents a pound at shipping points, while business has been reported done in No. 1 soft white shavings at 3.75 cents a pound New York and in hard white shavings of No. 1 grade at 4.75 cents New York.

OLD ROPE AND BAGGING. There is no change in old rope or scrap bagging and very little life in any corner of the trade. Consuming mills are doing practically no buying of consequence, and it is problematical at how low prices supplies can be secured. No. 1 domestic manila rope is quoted to consumers at 4.50 cents per pound and No. 1 scrap bagging at 2 cents.

There can be no successful development of business that does not carry the employees along with it. Consciously or unconsciously, we must all aim at the common good of all engaged in any productive enterprise.—Lord Leverhulme.

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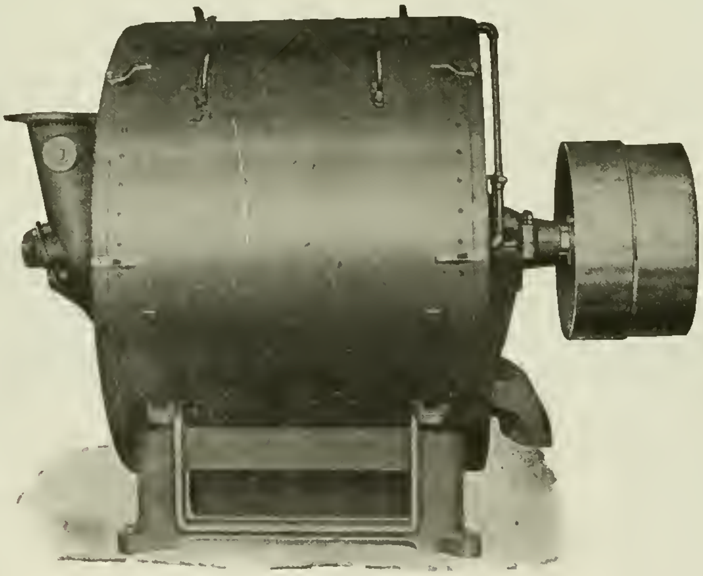

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Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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-:- EDITORIAL -:-

750 TONS AND A PROBLEM.

Twelve mills in Canada are making about seven hundred and fifty tons of sulphate or kraft pulp daily—over two hundred thousand tons a year. The production of each ton involves the discharge of a by-product which has caused considerable friction in some communities where such mills operate. Some by-products of sulphate mills have proved to be of value and have been made a source of income. Turpentine and pine oil might be cited as examples. The odor, characteristic of the neighborhood of a kraft mill may never be a popular perfume but it would be a great scientific as well as economic achievement to devise a means for removing the sting (g=k).

There is no country to which the manufacture of sulphate pulp is more important than to Canada. It would be a national asset to have a method of overcoming this disadvantage. A suit, now in the courts, for an injunction against the use of the process by a certain mill because of the odors are disagreeable to a gentleman owing a summer home in the vicinity, has brought the matter to the attention of the public. Apparently this gentleman so far seems to have the only olfactory nerves sufficiently supersensitive to inspire a law suit, but the incident, unpleasant as it is, serves to emphasize the importance of discovering a remedy for the trouble.

From work that has been done in Europe it appears that the troublesome smelling elements are present only in minute quantities and this is one of the difficult phases of the problem. It is a case where a little goes a long way. The task of capturing a few ounces of smell in a million cubic feet of atmosphere is not an easy one. To do it at all, not to speak of doing it economically, is really too much of a problem for one small mill to solve.

A Director of Research, who could coordinate the efforts of all the technical men in this branch of industry, would seem to be the most effective means of attack. The solution of this problem, which is but one of many facing the pulp and paper industry in Canada, is of such moment to all kraft mills, at least, that they should be glad to give the fullest co-operation and assistance to the work of the Department of Research which the Association has decided to establish. When it comes to work of a fundamental nature, such as investigating the chemical and physical properties of some particular substance we shall all be glad to have the help of the National Research Institute.

NOT WHO BUT HOW LONG

When the Editor came to Canada in 1916 the notion was fairly widespread in the United States that Canadian mills turned out some mechanical and chemical pulp and a sheet of newsprint that one would hardly boast of. The industry in the Dominion was a convenient supplementary source of supply, but not a really serious competitor. How opinions change! Canada is now looked upon as the back bone of the paper industry of this continent. Those who carefully studied the matter recognized this situation years ago, as evidenced by the mills on the Ottawa, the St. Maurice, the Saguenay, the Pacific Coast, etc. By far the greater amount of paper and all the pulp is made from wood and the preponderance is steadily increasing. Wood fibre is pre-eminently the basis of the Canadian industry, though our fine mills make as excellent a sheet of rag paper as the most fastidious could desire.

Some years ago the provincial governments of Ontario, Quebec and New Brunswick, recognizing their obligation to provide raw material for Canadian workmen, included in the terms for leasing Crown lands, the regulation that wood cut therefrom should be carried through at least one conversion process in Canada. Some American mills have become perilously short of pulp wood supplies and a vigorous attempt was made last year to have this restriction, especially in Quebec, removed. The government of Sir Lomer Gouin stood firm for the restrictions and the government of Hon. Mr. Taschereau takes the same stand. We may therefore consider the answer to the question, "Who shall use Crown land wood?" to be "Canadians."

Another question then arises which is fully as important as the first, namely, "How long shall Canadians cut and use this wood?"

Obviously this cannot be answered until three other questions are answered:

1. How much wood have we and how fast does it grow?

2. At what rate is it being consumed by converters and destroyers?

3. In what manner is it harvested and how can these methods be improved?

Since our advent as editor of the Pulp and Paper Magazine, we have become convinced that the problem of forest conservation is certainly the biggest economic question facing the industry and the eastern provinces, if not also the Dominion. Every opportunity has been taken to study the situation and we have planned a series of editorial articles dealing with the various phases of the problem. Much helpful assistance has been given by foresters and operators. The matter deserves earnest thought and discussion and the columns of the Magazine are open to any who have comments to make.

The question of "Who?" has been answered for good; the question now before us is "How?"

FAITHFULNESS

A friend of ours died last week. He was fifty years old and sme lamented his going because he was in the prime of life and might have continued to be of service. Some thought his work has not finished. Measured in the making of reports, compiling tables and balancing accounts the possibility of service would be merely a matter of more months. But our minister pointed out the great truth that a life should not be measured so much by what one does as by what one is.

Our friend was paid for what he did. What he was is beyond computation by the slide rule and adding machine nor could his sterling Christian character be represented by gold or silver. He was faithful, true, loving, kind, generous. Length of years is no measure of these qualities. Christ lived only thirty-three years, yet who would say His life work was not finished. Our friend was His faithful servant and so he was respected and loved by those whose privilege it was to know him.

There is a lesson here for all of us. No matter how important our work may be, or how many tasks remain for us to do, it is what we **are** each day that counts. If our true selves are upright, clean, and faithful, we shall do our work and there will be no cause for regret, when we go, for what we have not done, but only of appreciation for what we have been.

COBWEBS

No one will question the appropriateness of using the water mark to aid in enforcing prohibition in the United States. The water-mark "Internal Revenue-Prohibition" is to assure the genuineness of prescriptions for liquor. Canada might take a lesson.

One tree cut on the Chaudière River by the Brown Corporation made over three cords of pulp wood.

One hundred and twenty-five years old! George Bird did not live so long, but the spirit of life and good will, which he gave in 1795 to the concern now known the world over as Bird and Son, still lives. How proud George Bird would be of the little business he started in Needham, Mass., 125 years ago, now vastly greater in every respect because his successors have been true to his own ideals of honesty and responsibility. Bird and Son came to Canada in 1905 and built a mill in Hamilton, Ont. for making roofing papers. In 1908 the felt paper mill at Pont Rouge, Que., was bought, so Canadians are much interested in the growth and success of Bird and Son, which is so well set forth in a commemorative booklet.

A number of pulp mills have been shut down for at least a part of the past month. Inactivity has naturally hit the kraft mills hardest, as the general dullness in business is first reflected in the use of wrapping papers. From all reports, there are already signs of improvement. A mild winter this year has truly been a God-send to those whose work is slack.

The Chatham (N. B.) Weekly World adds its protest to the export of raw pulpwood, though several rossing outfits one exporting wood by the carload at good prices.

The Industrial and Educational Publishing Co. has launched a new monthly paper "Scientific Agriculture". It is the organ of the Canadian Society of Technical Agriculturists. Mr. F. H. Grindley is Editor and Secretary. We say it is a good paper. If you doubt it, send for a copy.

The next issue of the Pulp and Paper Magazine will contain the address of Mr. H. S. Taylor on "The Ventilation of Paper Machine Rooms" and the addresses of President Wilson, Sir Henry Drayton and Hon. Walter Mitchell.

"KEEP ON GOING, THERE ARE TWENTY MORE BEHIND YOU."

One of our recent salesman's bulletins reminded the writer of one of his own experiences in his early days of selling, says a mill paper.

"My chief sent me to West Virginia, and after I had called on a few buyers, I found that each one was offering the same excuse for not purchasing; namely, that four or five of my competitors had been there ahead of me. I, having no previous experience, thought the best thing to do was to wire headquarters, advising them of conditions, so I sent a telegram saying that there was no use of my travelling West Virginia, as four or five of our competitors had just covered the field. The answer that I received read: "Keep on going, there are twenty more behind you."

That experience made such a definite impression on my mind that I have never forgotten it, and it frequently creeps out, even to this day, when calling on dealers and they mention that this man or that man was in town yesterday." George E. Messer, in the Neponset Review.

Several hundred supporters of the Pulp and Paper League were on hand at the Scheduled games last week in Montreal and witnessed some hard-fought contests C. F. Dawson defeated Abitibi, 4 to 2; Riordon Co., and Canadian Export Paper played a 3 to 3 draw, while the game between Howard Smith and Macfarlane Sons ended in a one goal draw.

An Industrial Research Department

At the annual meeting of the Technical Section of the Canadian Pulp and Paper Association on January 19, 1921, a very important proposition was outlined and discussed. When the reports of regular committees, as printed in the Pulp and Paper Magazine for January 20, had been disposed of, Col. C. H. L. Jones was asked to present the report of the special committee on the matter of Industrial Research.

Col. Jones addressed the Section as follows:

This is the report of the joint committee appointed by the Canadian Pulp and Paper Association, and of the Technical Section of the Canadian Pulp and Paper Association to investigate the position with respect to the institution of a Department of Technical Research within the activity of the Canadian Pulp and Paper Association.

COMMITTEE ON RESEARCH.

By C. H. L. JONES, Chairman.

Report of Joint Committee appointed by the Canadian Pulp & Paper Association and the Technical Section of the Canadian Pulp & Paper Association, to investigate possibilities respecting the institution of a Department of Technical Research within the activities of the Canadian Pulp & Paper Association.

1.—History of Movement Prior to Appointment of Above Committee.

It has been realized pretty generally within the Association, and particularly by the Technical Section for over the past two years that the pulp and paper section of the Forest Products Laboratory was not functioning in a manner so as to produce the maximum benefit to the industry and the public at large. One of the chief weaknesses has been lack of staff.

Realizing this the Technical Section had appointed a standing committee called the "Committee on Forest Products Laboratory." This Committee had studied the situation thoroughly and in various reports had pointed out the situation, namely a finely appointed laboratory for pulp and paper research with thousands of dollars worth of equipment but lacking any proper program of work, staff or proper guidance.

In 1919 the Canadian Pulp and Paper Association authorized a substantial contribution towards the superintendence of the laboratory but such contribution was not found acceptable to the Government.

Various schemes have been proposed by individuals, all of which have been discussed by the executive council of the Technical Section from time to time, ranging from co-operation with the Government in the running of the laboratory to the buying of the equipment and starting of a laboratory in various new locations.

No co-ordinated effort looking to the final solution had occurred up to the time of the 1920 annual meeting of the Association and so at the first meeting of the executive council of the Main Association held in 1920, the President of the Association, Mr. George Chahoon, Jr., instructed the Technical Section to make a thorough investigation of the subject and to report with recommendations at the annual meeting of the Association in 1921.

During the Spring months of 1920 the Technical Section Chairman gathered the opinions of a large number of members who were conversant with the situation as well as the general opinion of many more relative to the advisability in a general way of the Association attempting to go into such a field. Furthermore, this subject was thoroughly advertised to all members as being one of the chief points for discussion for the 1920 Summer meeting of the Technical Section.

The result of this discussion was that it was thought wisest to have the investigating committee consist of representatives of manufacturers or management as well as of the Technical staffs. Consequently the Joint Committee of six, three Technical men and three from managerial end, was appointed.

2.—Work of Committee.

A.—Review of Forest Products Laboratory.—The Committee had prepared through the Secretary of your Association a complete review of the accomplishments to date of the pulp and paper section of the Forest Products Laboratory showing their original program, how much was carried out, etc., etc., and the present state of this section of the laboratory.

B.—Meeting of Committee.—The committee met on November 20, 1920, in Montreal, all members being present, and the matter was thoroughly gone into in all its phases.

The decision of the committee is as has been outlined in the recent circular letter of the Secretary of the Association. Briefly it is as follows:

Your committee recommends that the Association engage in the establishment and maintenance of a department devoted to Technical Research on pulp and paper work.

The committee feels that at the beginning no attempt should be made to take over nor work through the Forest Product Laboratory and no attempt to build a laboratory of our own until further developments have taken place.

The committee recommends that the Association co-operate to the fullest degree with the Canadian Council of Industrial Research in the furthering of the project of the proposed National Research Institute:

That to fully carry out this work the Association should have the services of a Director of Research with competent staff, who will be in full charge of all this work until such time as actual research work is begun and who will then be the director of this branch of the Association work. The details of the preliminary work of such a director and staff have already been set forth in the recent report by the Secretary of the Association sent to all members of the Association.

The committee recommends that the necessary expenses, which are estimated at around $35,000 for the first year, be furnished by the members of the Main Association on a pro rata basis.

3.—The Need for Such a Department.

I do not believe it is the duty of this committee to go thoroughly in this report into the details of the desirability of such a department. I will refer you to the annual report of the Retiring Chairman, of the Technical Section, Mr. L. H. Shipman, who has set forth there, the details of one problem alone which should be sufficiently illustrative of the general need of such a department of our Association.

Problems similar to the one there outlined exist without number throughout all branches of our industry.

Particularly are we working in the dark in our beating operations. What we think are identical conditions of material and operation give us entirely different results on different days. Only efficient, well directed and non-interrupted research will furnish us the why and wherefor and allow us more uniform results.

4.—Finally a Word of Warning.

While your committee is unanimous in their recommendation, it is made with the full understanding that the successful carrying through of such a program entails other support by the industry than that of money. This alone will not suffice. To quote a gentleman who has had considerable experience in co-operative research.

"It is one thing to talk co-operation and a laboratory program to be carried out for the benefit of all and quite another to generously support such a program by helpful contributions other than money. Instances have been known in other industries where such a co-operative research organization has been well supplied with funds and a lot of pro bono publico talking done but when it came to the contribution of facilities or information most of the mills were found to be tight shut."

Your committee feels this to be a point which should have careful consideration by the Association. Certainly we should not embark upon the proposed plan unless all plants and companies are prepared in advance to give the heartiest and best co-operation, and your committee would like to have this point thoroughly discussed in all its phases before the Association makes its decision so that if the plan goes through, all members may be fully aware of just what is contemplated.

Col. Jones added: It is the intention of the Committee to submit this same report to the general meeting tomorrow. The idea was that we should present it to this meeting first, hoping to secure the approval of this meeting, and then carry it on, strengthened, if possible, by your recommendation and acceptance to the general meeting.

I do not know that we can add anything to what had already been set forth in the way of general information by the Secretary. This report, which I have already read to you, is the feeling of the committee, in brief form.

I may say that at a meeting held in Montreal, we discussed the matter in very great detail, and I think when we went into the meeting we were all more or less "Doubting Thomases" about the whole proposition, our doubts fell away from us, and finally at the end of the meeting we were all in accord.

Now, I want to say for my own part, that I believe that this task of making this Department of Research a success is a big task. We cannot jump immediately into it and make it a success. It has got to be a slow growth, with the co-operation of everybody. As we say in the report it takes not alone money to make it a success; it takes the brains and the sincere co-operation and the help of this Section, and of the main Association as well.

The Chairman: What we, as a Technical Section, have got to do generally, is to arrive at a decision as to whether we will adopt this report, and thereby give our recommendation, through the Committee, to the main Association. Before I ask for a motion to adopt the report, I very earnestly request that these of you who are familiar with this problem of ours, will speak on it now.

We are very apt to make a very grave mistake if we allow the main Association either to go ahead with the program or not to go ahead with the program, if we do not give it thorough consideration. There are many pitfalls in this scheme, gentlemen; many of them. There is also an opportunity for a wonderful success.

Mr. Stadler: The very things which Mr. Shipman mentioned and the very things which Colonel Jones pointed out in his report, are the very things which the Belgo Company have thought might be disastrous eventually in connection with the direction of the research work. We are speaking here as Technical Section, and consequently, I shall confine my remarks to that point of view.

From the Technical Section's point of view and the experience I have had generally with the Association at large, I am confident in my own mind that, if the management of the various companies adopt a favorable attitude toward this central laboratory of research, the technical men will follow along similar lines. As I told you a while ago, our experience of the Committee on Mechanical Standards so far has just proven the absolute necessity for prompt and willing co-operation.

As Colonel Jones said in his report, it is not a question of money. That does not amount to anything, although it is very necessary, and if you cannot get the co-operation of the industry as a whole, you might just as well not start. It will probably interest you to know that in our committee work, the co-operation from the industry with the Committee on Mechanical Standards, was principally forthcoming from the news mills, and the only organiaztion — large organization — who furnished information other that news mills, came from the United States. So, apparently, according to my personal observation, the co-operative members are, at the present time, to be looked forward to from among the newsprint class.

I want you to carefully consider that if a central Department of Research is adopted or established, it must not work in a one-sided direction, and, therefore, the industry as a whole must give it its fullest support.

Is the Industry prepared to do that? It is up to us to say. Are we technical men prepared to do that? As I said a moment ago, I think they are, and for that reason I would suggest that in this meeting here, not only should the report be adopted, but that an amendment should be added to this report to the effect that the technical men of the industry as a whole, should pledge their fullest support and their fullest co-operation as to this new branch of the industry, and that was the particular reason why I wanted to talk to you, and I hope that your Chairman will draw up and bring forward a Resolution, (together with the adoption of the report) to the main Association at their annual meeting the day after tomorrow.

Mr. Stephenson: Mr. Chairman, Mr. Stadler has asked the Technical Section, in approving this report, to pledge their full support to the program, and their continuous helpful assistance in carrying it through, and it occurs to me that while members of this Section would be whole-heartedly in support of this, and most happy to carry it on, there may be some, although working members, are connected with an organization which may not be as enlightened as is desirable with regard to the co-operation necessary along this line. For instance, if our Technical Department finds that it wishes to carry out a mill-sized trial of something which promises success by the laboratory experience, can we not in some way—(perhaps by the method in which the matter is presented to the main Association) — get the members of the Association — the mills themselves — to guarantee that they will permit their technical men — or, if they have not technical men, if they will permit the representatives of the Technical Department, to make such use of their apparatus as may be adapted to making this program a complete success?

Mr. McInnis: We have given this considerable thought for two years. The first scheme under consideration was some form of co-operation with the Government in connection with the Forest Products Laboratory, but we did not seem to meet the general opinion of the Industry. In any event, it did not meet the approval of the Government, so and the next matter we considered was just how this problem might be met or handled, and the suggestion that I made to Mr. Hovey, before attending the technical meeting last summer at the Sault, was that some one individual be appointed or selected to head a committee or to head an association, or to head some form of an organization which could handle this matter for the entire industry. In other words, my thought was that the only way we could handle this and get the support of the entire industry — and get their whole-hearted support — would be to have a man who had sufficient personality to go among the different companies, and get them together on this subject. That was my thought at the time, and it is still my thought. In other words, the co-operation will have to be brought about by some individual or some group of individuals, such as a committee.

The points mentioned by Colonel Jones in his report, and by Mr. Stadler are very apt. In fact, as I see the problem which has been discussed this morning, I think it has divided itself into two ways. Naturally it must be assumed — or it can be assumed — that the technical men would prefer some system of this kind, whereby they can go to a central Laboratory, and have their particular research problems worked out; and the second question is just how strong the managerial end will be for this scheme.

I do not think there is any doubt but what all the companies will be in favor of this, to some extent—some more so than others. Certainly I do not think there is any question but that all the companies will be prepared to support it in a financial way. That is, of course, the first step. The second step is to work out just what is going to be handled; just what will be dealt with; and that is going to be mighty difficult, and it is going to require all the ability of a committee or of the men who may be chosen to direct the activities of this laboratory or council.

For instance, one mill is interested in certain problems, and when you get into the other Sections, there will be other problems. Naturally this laboratory can only undertake a certain amount of work, and the interest of the mills will depend upon the work that is going to be undertaken. Just how that is going to be decided is probably not material or to the point, but it seems to me that after the question of the money is arranger for, the most important thing is the personnel of the committee or the persons in charge of this department, and I think if that is taken care of satisfactorily, the other will come along all right. As has already been indicated this morning, it is not a matter of jumping out and doing this thing in a day, a week, or a month or a year, but it is a matter of growth. We see the pitfalls just the same as any one else does, and these pitfalls can only be overcome, as I see it, by the proper people getting together at the proper time. It cannot be done by correspondence.

To sum it up; we believe that this thing is absolutely necessary in this instance; we believe that in the various things that have been developed by the individual mills so far, that sufficient advances or progress has been made to show that there are mighty big problems ahead of us, and things about which it will be mighty important for us to know pretty soon. Therefore, I do not think there is any question of the necessity of the money being forthcoming if the problems can be worked satisfactorily for the entire industry, and I understand that is what we want.

Mr. H. O. Keay: Mr. Chairman, I think we can all endorse the points raised by Mr. McInnis, as to the attitude toward the report of the committee. It seems to me the committee has chosen the only avenue to success in this matter. They are proceeding with caution in not recommending our plunge into the establishment of a laboratory at once, but rather by the appointment of a director and proper staff, who will proceed logically in co-operation with the various mills, and I also note that they have mentioned the Honorary Council of Industrial Research of the Dominion.

It occurs to me that Mr. Stadler's point is very well taken that it is up to the technical men to enthusiastically back up the findings of the committee.

It also occurs to me that much work might be done almost at once without the laboratory, through the co-operation of the different mills. Some mills are already equipped, as has been hinted at, for certain lines of research work, which is very important to them. It just happened that some have approved equipment already for the attempt at the solution of some of the vital problems. It would seem that these could be carried out without interfering with their regular production too much, if their hearts are in the matter.

Doctor Bates: As far as Price Brothers are concerned, I think it is safe to say that they are quite in line with the Abitibi, the Laurentide and the Spanish River, and all other mills. I have heard that stated by the President of the Company, and there is no doubt but what full co-operation can be guaranteed.

As far as the problems themselves go; some of us have discussed them so much that we are almost tired of talking about them. It appears more as a problem of organization, rather than a question of the technical end. I think the technical men have full confidence that the problem can be faced and solved provided there are satisfactory facilities and co-operation. It is, therefore, essentially a question of organization of the work. I think that is where the Forest Products Laboratory failed to quite an extent; that there was no definite organization in connection with the industry.

There is certainly a need of one central laboratory in this country for the pulp and paper industry. Can this organization be brought about to get the support of all the interested parties — essentially the pulp and paper industry, and also the Government, in such a way that it will be a good, working organization?

Right from the start of this Committee work, I have laid stress on the business organization of the work, and therefore, looked mainly to the business men on the committee to do the talking to us and to use their organizing ability to show how the work should be placed on a firm and permanent basis.

I think the ground has been covered pretty well in the past few years with the experience we have had in the Forest Products Laboratory and in the technical departments of the mills, and I think the past year has seen a great deal of useful publicity given to this question and the Research Council and the Government has done as much, I think, in the way of stimulating the public to the ins and outs of research, as in any other way, so I would think the discussion this morning would well be along the lines of just how the work should be organized and I think we should feel safe in recommending this report of your committee to the main Association.

Mr. Nelson Gain: Mr. Chairman, I have not had a chance to give to this matter the study which probably the newsprint men have, but as far as we are concerned, I would like to be put on record that we are heartily in favor of pushing this through, and starting something where we can all go and have our troubles and our problems solved. In fact, it should almost be Utopia—the end of our troubles. I do not think there is anything more I can say, only that we are certainly heartily in favor of pushing this forward.

Mr. W. C. Anderson: Mr. Chairman, I do not think I can add anything to what has already been said.

Personally, not being an official of our company, I am not in a position to say very much, but as far as the technical end of the affair is concerned, I am very much interested, and I can assure you that anything that I can do to help to make the proposition a success, I will surely do.

The Chairman: Doctor Bates has said that he thought a considerable portion of the discussion this morning should be on another phase of the question.

Now, we have heard from quite a few gentlemen this morning; their opinions seem to be that the necessary co-operation can be obtained. I will not now take any further time in calling upon any particular gentleman, but will be pleased to have any one in the room volunteer to say anything on this first phase of it. Is there any one else here who would like to speak either for or against the proposition, regarding the possibilities of its being a feasible scheme? .

Mr. Crossley: Mr. Chairman; it seems to me that the question at first is not one of the laboratory, but one of the personnel, and when you come to think of the facilities at the disposal of the industry throughout the country for research work, it would appear that the organization of whatever kind it may be, should be one of parentheses naturally, because there is equipment in existence for research, and its use should be collaborated. If a laboratory were built to-day, it would be almost impossible to install in that laboratory apparatus which would give such good practical results as the scientific facilities already installed in some of the mills, so I think the action of the committee is well take in not recommending the installation of the laboratory at the present time, but the promotion of some sort of research work or research organization, and to place the apparatus already installed in some of the mills at their disposal.

Speaking rather as one familiar with the mills with the smaller out-puts, perhaps the explanation of the fact that so much information comes from the newsprint mills is that they have more or less uniform mills, and they can formulate their plans a lot better, and there are several ways in which a great deal of work could be done with existing equipment of the mills, if they would co-operate and allow the facilities they have to be available to a visiting Research Commitee, to permit them to establish themselves in their mills for two or three months, and investigate conditions there, and then go from there to another mill and investigate conditions, and so on. With the present-day equipment it is possible to get a lot of information as to power, for instance, which was not available in the days when some of the older mills were built, and I think some of the mills with a varied output could do a great deal to help in this way, by placing their mills at the disposal of a roving committee which could do a little experimenting from time to time.

Dr. R. F. Ruttan, head of the Chemistry Department of McGill University and a member of the National Advisory Council for Scientific and Industrial Research was called upon and contributed some very interesting remarks on the Central Research Institute. This matter will appear next week.

Mr. Carruthers: I will move that this report be adopted, with the understanding that it be favorably recommended to the parent organization, with the understanding that if they will furnish the financial and moral support, they can be assured of the hearty co-operation of the Technical Section.

The motion was seconded by Mr. Stephenson and was carried unanimously.

(To be continued, giving the discussion by the C. P. & P. A.)

SWEDISH PULP MAN INVESTIGATING BRITISH COLUMBIA MILLS.

With the object of studying pulp conditions and methods in British Columbia at first hand, Mr. Nels Wikander, of Stockholm, Sweden, has been visiting the mills in British Columbia. He has been superintendent of the large pulp plant of the Ohruiken Company at Skellaftea, Sweden, for some years and also has been engaged in the lumber trade in his own country.

He states that, since the end of the war, the pulp trade in Northern Europe has improved greatly. During the war, conditions were serious, but today the demand is increasing and prices are high. Wages in Sweden also are very high, a laborer in the woods receiving as much as twenty crowns ($4) a day, which in Europe is a high wage.

Swedish mills manufacture chiefly sulphite pulp for export to Great Britain and other European countries. Much mechanical groundwood pulp also is exported to be used in the manufacture of newsprint.

Word comes from St. George, N.B., that A. C. Grant has sold his interval property to the Press Pulp & Paper Co. It adjoins land already owned by the pulp concern and will be used by it next season. The organization has also purchased the slasher at Musquash and will install them in the mill at the Dewar site. The Gregory Lumber Company has sold its holdings on the Magaguadavic and its mill at Bonny River to the pulp company. It is rumored that other concerns along the river have also been approached. The Press Pulp and Paper Company has rigid laws of conservation, which it adheres to in New York and other places where the firm lumbers, and report says that it will introduce the same measures of conservation on the Magaguadavic.

BLOTTING AND FILTER PAPERS.

By Dr. G. SCHUMANN

(Translated by Dr. Paul Bartholow from "Der Papier-Markt," January 1, 1921 for the Pulp and Paper Magazine.)

Although distinct in uses, blotting and filter papers are both made of porous materials, a fact which has been the occasion of a close similarity in the manufacture and in the preliminary treatment of the pulp. Writing, printing and packing papers, as well as wrappings, must have a closed surface, be sized and possess fastness to moisture and solidity. All these characteristics, in the case of blotting and filter papers, are secondary; while sizing is naturally to be avoided. Accordingly the preparation and treatment of the raw material are quite different, but the work of the paper machine is not materially changed, or at least, only so far as the preparation of the stuff brings with it some differences.

Among suitable raw materials, those are chosen which have an open, porous structure. These properties the manufacturer will do well to increase and refine as far as possible. For there are comparatively few fibers that come under this head; these are principally wool or cotton fibers and the pulp of aspen.

Under the microscope wool fiber appears as a closed, hard, cylindrical tube without branches; and of a very brittle structure; cotton fiber as a collapsed tube, as obtained on sucking out the air, while the aspen discloses short, stiff, fiber bundles. The most useful of these raw stuffs is cotton, and its tubular fibers seem originally designed for purposes of suction; wool, on the other hand, through its stiffness and hardness, tends rather to break up, forming interstices; and aspen is to be employed as a substitute in the manufacture of blotting papers of inferior grade. The desired properties can be developed and improved in three ways:

1.—Fermentation or maceration.
2.—Refrigeration.
3.—Grinding in a Hollander with sharp knives.

Through maceration are utilized the oxidizable incrusting substances, impurities, and residues which accumulate on and in the fibers during the period of growth of the cotton and other plants. These substances are exposed to a kind of fermentation, or process of oxidation, whereby the fibers are split, torn open, broken up and reduced to a more porous state. For this purpose the cotton rags are disposed in layers to a considerable height, sprayed with water which is renewed from time to time, in order to maintain an even wetting throughout the piles. The temperature of the rags rises quickly through oxidation, and at the end of a few weeks they are ready to be washed and ground in a Hollander fitted with sharp knives. The half-stuff thus obtained has great suction power, and yields a blotting paper of high value, and, especially, blotting cards. But since the fiber is softened and rendered pulpy by the fermentation process going on within itself, thinner blotting papers require the addition of stronger fibers, in order to hold the sheet together on the machine, and withstand the tension which the stretch imposes on it, whereby, on the other hand, its power of blotting and suction may be influenced unfavorably.

2.—Refrigeration is a procedure pursued in Sweden with finished and bleached cotton stuff, and also soda pulp. Here, too, as with fermentation, the design is to break open the walls of the fibers, in order to obtain an interlacing, porous structure. Since water at 4 deg. has a greater density than water at 0 deg. C. and since it expands about one-tenth of its volume in freezing, it bursts hollow vessels which are filled with water. Similarly fibers with a central canal are broken open and become not only more porous, but more permeable. The great merit of Swedish filter papers from Gryksbo and Lessebo depends upon this freezing proess together with the use of pure spring water.

3.—If the Hollander with sharp knives is employed for grinding pulp prepared by processes 1 and 2, it is in cases where these operations are considered too lenthy and expensive, for by means of quick grinding alone can the stuff be reduced to short fibers and produce a pink, porous pulp capable of suction. The fibres are cut, preferably in short lengths, not bruised, and by this means a loose, soft and spongy net-work is formed, which sucks up liquids as easily and thoroughly as it allows them to pass through. Blotting pâper is in a manner a continuous, coherent mesh of holes and canals, which by capillary attraction enable it to suck up liquids to the requisite height. The determination of the value of blotting paper depends upon the calculation of the time in which a strip placed vertically in liquid becomes moistened, or the height to which the liquid rises in a definite time.

In manufacturing the paper from half-stuff produced by these processes the cylinder paper machine is used much more than the long Fourdrinier machine, for it permits of an easier passing over of the soft sheet to the press rolls. Drying of blotting and filter papers should approximate air drying as far as possible; for this purpose therefore a number of moderately heated cylinders are employed, with subsequent drying in a current of air. The best filter papers are often finished in suction boxes, and the sheets after the squeezing out of lumps by means of an hydraulic press, are hung in clips to dry in the air. Experience shows that air-dried paper, made out of the same stuff on the paper machine, is superior in durability and strength.

From blotting and filter papers the so-called filter-mass has been evolved. In this case the half-stuff is not worked up on the paper machine, so that it is manufactured more cheaply. The prepared filter-mass is run into pressure chests provided with a false bottom where the water is squeezed out and the stock subsequently dried in the air.

Filter papers must be free from earths, minerals, and ash residues, in view of the fact that they may be burnt with the deposits on them for chemical tests. When chemically pure spring water is not available, distilled water may be used in making them, supplemented by washing out with hydrochloric or hydrofluoric acid.

Aspen wood pulp is good raw material for the inferior grades of blotting papers from which filter boards are produced, for school-books, and the like. Its suction properties and bright color are increased materially after bleaching with sulphurous acid and water. But the sheet requires the addition of stronger fibers for the handling on the paper machine; in the case of ordinary blotting papers unbleached soda pulp from pine may be used, and bleached for the better grades. Finally a leaf-wood cellulose is worthy of mention, beech cellulose, cooked by the soda process and bleached with chlorinated lime, which yields an uncommonly soft and porous half-stuff. However, on account of the frequent presence of resinous and waxy bodies it readily occasions impurities, unless the raw wood is subjected to a careful sorting before cooking.

Exports Gained 50 per cent

Canadian exports of pulp and paper during December reached a value of $14,612,083, compared with $9,798,372 in November, 1919, a gain of $4,813,711 being made up as follows:

December.	1919.	1920	Gain.
Paper..	$6,212,430	$8,637,214	$2,424,784
Chem. pulp	2,768,250	4,048,477	1,280,227
Mech. pulp.	817,692	1,926,392	1,108,700
Total..	$9,798,372	$14,612,083	$4,813,711

The exports of paper included 4,894 cwts. of book paper, valued at $68,098; 1,300,431 cwts. of newsprint, valued at $7,369,631, and other paper to the value of $1,199,485.

Pulp exports included 146,254 cwts. of sulphate (kraft) valued at $826,458; 163,809 cwts. of bleached sulphite, valued at $1,282,206; 361,234 cwts. of unbleached sulphite, valued at $1,939,813; and 672,154 cwts. of groundwood valued at $1,926,392.

The countries of destination were: Paper, United Kingdom, $366,549; United States, $6,342,874; other countries, $1,927,791; Pulp—United Kingdom, $1,291,-

EXPORTS OF PAPER, WOOD PULP AND PULP WOOD.

For December, 1919 and 1920; and nine months ending December 1918, 1919 and 1920.

		Month of December		Nine months ended December.		
Paper		1919	1920	1918	1919	1920
Printing paper						
Book paper	Cwt.	2,485	4,394	....	36,338	47,733
	$	21,389	68,098	....	333,363	525,151
Newsprint paper	Cwt.	1,370,526	1,300,431	....	10,427,203	11,393,581
	$	5,051,898	7,369,631	....	37,255,290	56,971,725
Printing paper	Cwt.	....	....	9,507,168	....	....
	$	....	....	28,161,949	....	....
Other paper	$	1,139,143	1,199,485	4,507,411	6,609,453	10,191,825
Total paper	$	6,212,430	8,637,214	32,669,560	44,198,106	67,688,697
Wood pulp:						
Sulphate (kraft)	Cwt.	223,524	146,254	....	1,882,680	2,027,387
	$	716,202	826,458	....	6,187,015	10,665,430
Sulphite, bleached	Cwt.	128,164	163,809	....	852,809	1,644,841
	$	679,339	1,282,206	....	4,297,442	13,231,216
Sulphite, unbleached	Cwt.	369,489	361,234	....	3,599,733	4,373,666
	$	1,372,709	1,939,813	....	13,366,199	25,763,115
Chemically prepared	Cwt.	....	....	6,716,582	....	....
	$	....	....	24,074,950	....	....
Mechanically ground	Cwt.	541,240	672,154	2,900,218	5,622,516	4,921,759
	$	817,692	1,926,392	3,673,618	6,376,134	15,567,541
Total wood pulp	Cwt.	1,262,417	1,343,451	9,616,800	11,957,738	12,967,853
	$	3,585,942	5,974,869	27,748,568	30,226,806	65,227,302
Pulp wood	Cord.	46,747	172,024	1,205,455	678,688	1,087,360
	$	480,669	2,621,081	11,595,228	6,802,209	14,125,577
Country of Destination.						
Paper and manufactures of—						
To United Kingdom	$	611,482	366,549	684,483	3,350,899	3,411,777
United States	$	4,336,505	6,342,874	27,128,589	35,258,021	52,612,966
Other Countries	$	1,264,445	1,927,791	4,856,288	5,589,186	11,663,954
Wood Pulp—						
To United Kingdom	$	355,486	1,291,534	48,522	4,149,555	7,678,274
United States	$	2,801,204	3,644,543	25,324,130	22,619,334	32,935,844
Other Countries	$	429,252	1,038,792	2,379,916	3,457,917	4,613,184
Pulp wood—						
To United Kingdom	$	....	....	....	....	....
United States	$	480,669	2,621,081	11,595,228	6,802,209	14,125,577
Other Countries	$	....	....	....	....	....
Total Paper, Wood Pulp and Pulp wood—						
To United Kingdom	$	966,968	1,658,083	733,005	7,500,454	11,090,051
United States	$	7,618,378	12,608,498	64,047,947	64,679,564	119,674,387
Other Countries	$	1,695,695	2,966,583	7,232,204	9,047,103	16,277,138
Totals	$	10,279,041	17,253,164	72,013,156	81,227,121	147,041,576

534; United States, $5,644,543; other countries, $1,038,792.

Unmanufactured pulpwood to the extent of 172,024 cords, valued at $2,621,081, was exported to the United States during December, compared with 46,747, cords, valued at $480,669 in December, 1919.

For the first nine months of the current fiscal year, April to December inclusive, pulp and paper exports were valued at $132,915,999, compared with $74,424,912 for the corresponding period of 1919 and $60,417,928 in 1918, a gain of $58,491,087 over 1919 and of $72,498,071 over 1918. They were made up as follows:

Nine months.	1918	1919.	1920.
Paper..	$32,669,360	$44,198,106	$67,688,697
Chem. pulp ..	24,074,950	23,850,652	49,659,751
Mech. pulp . . .	3,673,618	6,376,154	15,567,541
Totals	$60,417,928	$74,424,912	$132,915,999

Imports of manufactured pulpwood for the 9 months amounts to 1,087,360 cords, valued at $14,125,577, compared with 678,688 cords, valued at $6,802,209 for the corresponding months of 1919, and 1,205,455 cords, valued at $11,595,228 in 1918, all of which went to the United States.

APPOINTMENT TO STAFF OF FOREST PRODUCTS LABORATORY.

Improvements in facilities for research into wood has been made possible by the reorganization of the Forest Products Laboratories of Canada in Montreal. These laboratories have suffered from the sudden recognition of the need for technical men by the pulp and paper industry. During the past few months a number of appointments have been rendered possible through the recognition by the Civil Service Commission of the necessity for higher salaries for technically trained men, and by the allotting of increased remuneration to a number of technical positions in the laboratories.

The position of superintendent has been filled by the appointment of Mr. William Kynoch, whose experience in forestry and wood technology should be of value to the lumber industry. Chiefs have been found for the three divisions of timber physics, wood preservation and timber tests, and the staff of the latter division has been increased. The division of timber tests has, without intermission, carried on its programme of testing for strength, hardness, etc., all the commercial species of Canadian woods. In all, six new technical men have been admitted to the staff and two other appointments are pending.

ANOTHER RECORD YEAR FOR BURT.

A concern which has enjoyed a most prosperous period since the close of the war is the F. N. Burt Company whose annual report for the year ended December 31 last has been mailed to shareholders. This shows profits of $842,712, compared with $795,714 in the previous year. The profits having been arrived at, as President J. Moore points out, "after writing down inventories to present replacement values."

"Incoming business fell off during the last quarter, but we have entered the year 1921 with a substantial amount of orders on hand and look for a satisfactory volume of profitable business," the report concludes.

Success comes in cans—failure in can'ts.

British Trade News

(From our London Correspondent.)

London, Jany. 12, 1921.

There is a well known paper agent in London today who is a prominent Technologist, and he has a thousand tons of Scandinavian newsprint, 37 inches broad, for sale at 7½ cents ber lb. Indeed he is not selling it privately, but he announces the sale of the newsprint publicly. It is impossible for British mills, at the present cost of production, to sell at this rate.

Bamboo Wall-Papers.

Some very fine samples of wall-papers from bamboo pulp are at present on the British market. Recently I have inspected the samples and they are beautifully finished. A notable feature is the great attention that has been given to the designs and coloring. These are artistically and skilfully executed, with a touch of Japanese style about them, and to people with Eastern or Colonial tastes they should strongly appeal. The question now is will the British House decorators, or wholesale agents, take on to them.

Wrapping Papers.

The great depression prevailing in the British Textile industry has seriously affected the mills producing wrapping papers. In the Textile and boot trades enormous quantities of wrapping papers are consumed each year, and during the war the mills in England could not meet the demand. The boom that followed the Armistice also created hey days for wrapping papers; but, now, the Textile depression has set things at rest and producers are looking further afield to get clear of the stocks they have on hand.

Canada in London.

In a few days time Mr. W. C. Noxon, a well-known business man in Canada, who has been head of Trade and Commerce in London for the Dominion, will sail for home, and I would advise all paper men to consult him as to the actual conditions prevailing here. For two years he was in England, and his Department was established with a view to Canada getting a bigger share of the European trade. From what I can hear Mr. Noxon is in favor of the establishment in London of a Canadian Trade Council, which would bring together the various Canadian trade interests established here. It is certainly a move in the right direction, and from a pulp and paper point of view the interests of the Dominion mills cannot be watched too closely in England with the tactics adopted by Scandinavians and Germans to retain the market. Mr. Noxon was greatly appreciated in London—but what is our loss is Canada's gain. By the way, it is intimated that there is some overlapping of duties between Canada's official and semi-official organizations for developing trade which are already located in London. At all events a Canadian Trade Council is needed, and it must be a keen one to snatch away what foreigners are not entitled to.

Paper Depression.

Depression still continues in the British paper industry, and after the Xmas holidays some of the mills did not reopen for a considerable time. They took extended vacation, and now many of the workers are on short time. Some mills are shut down and unemployment is rife. The members of the Government are now trying to establish a long foreign credit scheme, to apply mostly to European centres, but it is very doubtful if such a scheme will be of any use to paper makers —certainly not to pulp producers. But indirectly it may help other industries, and through the movement of trade that may follow the paper mills and pulp sellers may eventually reap some benefit. From what I can see of the scheme at present it is a dangerous one, and producers must have some guarantee that their money is safe. Meantime, while the depression prevails in England, Germany is not forgetting the market with some nice looking cheap paper, and Scandinavian lots are going into competition with it at remarkably low quotations. Of course, Germany is buying pulp cheap, her production of paper is cheap, and the value of the Mark in England being at a very considerable discount, in comparison to the sterling, the Teuton gains considerable profit by the sale of the finished article in London. Export and contracts are just keeping the British mill machinery running; they have had good days since 1914, and now they are on lean days. Therefore, they can only bide the time away as "Every cloud has a silver lining."

The Pulp Situation.

The pulp situation shows no change. Paper mills have all their requirements and pulp men are at a standstill as regards securing new business; they are merely devoting their time to stock-taking and clearing up office business. The depression, however, in the paper industry is reflected in pulp prices, and quotations are now as follows per ton, c.i.f., British ports: Bleached Sulphite, £55; Easy Bleaching, £42 7s. 6d.; Sulphite News, £37 10s.; Unbleached Soda, £37 10s.; Unbleached Soda Kraft, £33; Groundwood (wet), £10; Groundwood (dry), £20. It will be seen from the foregoing quotations that the many vicissitudes through which pulp has gone since 1913—unparalled in the history of pulp manufacture—have driven prices down and they are gradually getting near prewar figures. Several elements are responsible, but the principal one is the contention of paper producers that if they are going to compete with Scandinavian and German prices they must have pulp at reduced price. That is a bone of contention. The foreigner who produces his own pulp and turns it into paper, can beat the Britisher in prices in his own market.

Swedish Pulp.

According to advices that have reached London the following figures show the estimated production of Swedish pulps for 1921:—

	Tons.	For Export.
Bleached Sulphite.	68,000	45,000
Unbleached Sulphite	710,000	550,000
Bleached Sulphate	7,000	6,500
Unbleached Sulphate .. .	210,000	150,000

The best portion of the pulps for export are already sold. No particulars are yet available regarding groundwood production, but it is a significant fact thet Canada practically killed Sweden's groundwood trade in the States. The big demand for newsprint in American quarters enabled the Swedes recently to ship several thousand tons of groundwood (wet)—and Norwegians also—to U.S.A. ports and it would be interesting to know the price being realised on the American markets. Canadians may find this out for their own information. The result would certainly be worth knowing. In the above figures the difference between the actual production and the quantity for export denotes the amount of pulp used by Swedish paper mills for their own purposes and for competition in British and other markets.

A Century of Papermaking.

I have just received a neat volume entitled "A Century of Paper-Making, 1820-1920". It gives the history of Robert Craig & Sons, Ltd. who own two Scottish paper mills. Under the name of Craig, a household word in the United Kingdom, paper has been made for 100 years in Scotland and during this period they developed a fine connection with Canada. The firm is still as progressive as of yore and is worthy of all respect.

NOTELETS.

Mr. Richard Greenhalgh, of Messrs. Greenhalgh & Co., has died in his 47th year. He as a well-known paper seller in Lancashire.

Mr. William Dedrick, of Snodland Paper Mill in Kent, who died sometime ago has left £46,768 in his will.

Manchester is forming a branch of the Technical Section of the British Paper Makers Association.

James Milne, the paper-makers engineers, have declared a dividend of 10 per cent, carried £5,000 to reserve and carried forward £3,504.

At Penicuik 400 paper mill workers are out of employment. This is only one instance of depression.

Swedish kraft paper is being sold in England from £56.15 to £57 a ton.

While British people are talking of a foreign credits scheme to help trade, Berlin says: "Any orders for paper or pulp we receive, there must be cash down after delivery." This is the result of cheap production.

The Excess Profits Duty has killed the progress of industry in the United Kingdom. Mill owners say when it is removed by the Government the outlook will be brighter.

Swedish pulp mills are short of orders, only the U.S.A. doing a little business with them; paper mills are providing for stock purposes only.

SODIUM SULPHATE FEVER.

The province of Saskatchewan has become afflicted with a new disease. We have called it sodium sulphate fever. While it may extend slightly beyond the limits of the province, it is particularly strong in this district. Everyone is having lake deposits analyzed and is about to become wealthy over night by the simple process of digging up sodium sulphate. Some notice is being taken of this by provincial authorities with a view to warning the unwary that the mere presence of large or small deposits of natural salts of this nature does not necessarily insure the immediate swelling of personal bank accounts.

This resource is one which, if handled properly and in a co-operative manner, may mean considerable to the province. Some companies are proceeding along correct lines and are studying the problems of recovery and marketing. To begin with, freight rates are not favorable to say the least, and as there are other sources of natural and synthetic salts, the development of a deposit calling for large outlays should be thoroughly considered. Stock exploitation should be avoided, and the Government is well advised to warn the public generally speaking. At the same time, some of the deposits at least are being profitably developed, and for those who are honest and know their business the opportunity for investment seems to be sound. This is a new opportunity to develop a resource property and we trust it will be handled sanely.—Canadian Chemistry & Metallurgy.

British Trade in Pulp and Paper During 1920

(From Our London Correspondent).

Canada's Position in Groundwood.

The year's trading in pulps for the United Kingdom shows some remarkable figures for 1920. British pulp and paper men have been making history and through the volume of figures just issued by the Board of Trade, in London, one can see "boom" reflections. Never in the history of British papermaking have such large quantities of pulps been imported as there were during the year just ended. Some people say: "Oh! I was glad to see the end of 1920 as it was an up-down-period," but to the pulp producer and the pulp seller it was a period that brought gold to the mill. For the last 8 or 9 years, I have at times, drawn the attention of Canadians to the growing market for pulps in the United Kingdom and 1920 will stand pre-eminently for records, a fair share of which go to the Dominion, but not what is desired. Compared with Schandinavia Canada is handicapped by the shipping facilities and the question must be settled some day if Dominion producers are to retain and increase their hold in the British markets. The rate of exchange is another subject. But looking back over past imports of pulps and through United Kingdom ports I find the quantities and values work out as follows:—

	Quant. in tons	Value
1920	1,094,173	£29,530,239
1919	937,920	15,402,937
1918	419,553	12,783,031
1917	386,957	9,520,023
1913	977,957	4,617,687
1912	925,590	4,418,420

I have left out 1914-15-16 figures as they are small and shipping was disorganized, as well as the markets. They, however, cover the total quantities and values of bleached and unbleached dry, and wet chemical pulps, and dry and wet groundwood. It will be seen from the returns that the British pulp market is gradually becoming an important one and that the values of the imports are unprecedented. While on the question of values, a comparison of prices per ton are worth recording for 1920, and previous dates:

	1920 £	1919 £	1914 £	1913 £
Bleached Sulphite	60	40	12	11½
Easy Bleaching	51	33	8½	9¼
Sulphite News	45	30	7½	8½
Soda Unbleached	42	27	8	8½
Soda Kraft	38	24	7	8¼
Groundwood (wet)	13	9	2	2⅛
Groundwood (dry)	14	17½	4¼	4½

The prices for 1920 are taken at the close of the year, but at previous dates they were much higher.

Looking at the subject of prices from another standpoint. I will take the last 3 months of 1920 and quote the c.i.f. values, per ton, when the pulps of all kinds, chemical and groundwood, reached the port of the United Kingdom:—

	Chemical Tons	Aver. c.i.f. Values £. s. d.
Dec.	46,923	41.19.1
Nov.	48,758	43.19.6
Oct.	39.030	43. 5.6
	Groundwood	
Dec.	41,764	14. 3.7
Nov.	31,069	13.18.7
Oct.	49,937	16. 4.10
	Chemical	
1920	550,000	38. 9.9
1913	412,000	8. 0.9
	Groundwood	
1920	539,000	15. 3.6
1913	566,000	2. 6.1

Pulp prices are on the downward trend at present in England, dullness still prevails from a seller's point of view.

Canada's Trade.

Canada's trade in groundwood with the United Kingdom in 1920 shows a falling off when compared with 1919. The total imports reached 510,392 tons, as against 494,787 tons in 1919, 109,048 in 1918, and 174,550 tons in 1917. The c.i.f. values for 1920 reached £7,355,768, which is a record, as against £4,188,736 in 1919, £1,346,035 in 1918, and £1,689,976 in 1917. The sources of supply were as follows:—

	Tons	Value c.i.f.
Sweden	84,176	£1,372,374
Norway	305,322	3,740,013
Canada	87,524	1,643,906
Other Places	33,370	599,475
Total	510,392	£7,355,768

Canada it will be observed has for some time past captured a fair amount of Sweden's trade in England and Canada's trade in groundwood alone with England, now exceeds £1,000,000 sterling. This is a handsome sum for the Dominon pulp men in a year, and next year I hope to see an improvement on them.

Canada's shipments to England of wet groundwood prior to 1920 are shown as follows:—

	Tons	Value	Total Recd. in U.K.
1920	87,524	£1,643,906	510,392 tons
1919	98,576	900,492	494,787 "
1918	......	....	....
1917	......	....	....
1913	69,090	156,276	556,987 "

Canada's exports to the British market reached a record in 1919, but no doubt the investments that have been made during the past twelve months may act as a stimulus to improving trade in the future. Norway has a big pull on British papermakers in groundwood. They shipped no less than 305,300 tons roughly which meant over £3 millions passing out of the country. It is no wonder, therefore, that some Norwegians of late are against the investment, or controlling, of Norwegian mills by British capital.

Sulphite.

There was a remarkable development of British dealings in sulphite. The actual figures for Canada are not yet available, but in bleached and unbleached sulphite there is a fair volume of business passing between the Dominion and English buyers. The imports from all sources were in 1920:—

	Tons	Value
Bleached sulphite (dry)	29,410	£ 1,468,959
Unbleached sulphite (dry)	511,882	19,544,097
Chemical (wet)	13,912	347,479

These are record figures and the countries of supply were:—

	Bleached Sulphite Tons	Value £	Unbleached Sulphite Tons	Value £
Sweden. . .	5,921	332,521	334,521	12,456,751
Finland. . .	231	21,095	37,777	1,495,559
Norway. . .	16,107	748,359	91,840	3,274,885
Germany . .	657	31,712	8,163	406,533
Canada, etc..	6,494	335,372	39,581	1,910,369

With Canada there are one or two supplying countries classified, but the greater portion was imported from the Dominion.

Germany during 1920 entered the sulphite and suiphate markets and the shipments on the whole have not been unsatisfactory, but they are still a long way behind the pre-war figures when the Teutons exported to us 1,532 tons of bleached sulphite and 39,440 tons of unbleached. Finland's figures are also below pre-war returns. A glance back at some of the peace-time figures, however, are worth comparison and I will quote 1919 — to 1913.

Bleached Sulphite
Tons.

	1919	1918	1917	1913
Finland.	95	. . . . . .	. . . . . .	1,017
Sweden.	4,255	757	1,548	2,243
Norway.	11,228	15,042	18,024	12,542
Germany	. . . . . .	. . . . . .	. . . . . .	1,532
Canada, etc. . .	3,429	208	1,170	3,287

On comparing these figures with 1920 figures above it will be seen the Bleached Sulphite market has not fully recovered after the war. Some countries are still missing from the list, but trade with Canada has been maintained. Therefore, in order to get at Canada's trading figures with the United Kingdom, it will be necessary to turn to the Dominion's 1920 export returns. Sulphite unbleached imports were:

Unbleached Sulphite
Tons

	1919	1918	1917	1913
Finland.	6,668	. . . . . .	. . . . . .	40,611
Sweden.	270,822	97,653	32,270	241,193
Norway.	64,549	119,059	75,566	45,681
Germany	. . . . . .	. . . .	. . . . . .	39,440
Canada, etc. . .	44,834	4,043	34,272	7,759

Taking the returns as a whole on the years's trading, they are satisfactory from a seller's point of view and we may count ourselves lucky in England if greater figures can be produced at the end of 1921. If we can it will mean another "boom" in the paper industry; but judging by the outlook at the moment British mill owners may find themselves in a "tight corner" with the growing foreign competition and under-cutting of prices in paper. Their only salvation at present lies in the export trade and were it not for this branch of the industry they might "shut up shop" — a movement which would be seriously reflected in pulp.

THE BRITISH PAPER TRADE IN 1920.

At this time of the year one feels like putting the clock of history back and becoming retrospective. And while all eyes are deeply concerned in peering through the thin mist that separates us between our present existence and the future, for history's sake we must not forget our deeds of the past. Therefore, they must be chronicled for future generations, leaving the future to record its own doings.

Paper.

During 1920 a feature of the paper industry was the remarkable up-and-down-hill competition. There was revival here and depression there; but one thing came to light, and that was the public—the whole world—realized that it was impossible to run Governments and commercial life without paper. Therefore, it became an actual fact, stamped and impressed on public mind, that without paper there was chaos. That being so, a great awakening followed. Americans rushed to Europe to replenish their supplies and meet demands; Canadians stood firm as rocks, and domestic supplies were cut down; Scandinavians were fighting local troubles and, naturally, holding out for their prices for what they had to sell; Australians and New Zealanders made London their centre, looking for paper in Canada, in the mother country, and Scandinavia; and last, but not least, the British mill men went on steadily plotting in their plans and output, giving a supply here, and trying to meet the wishes of everybody. Then came the great awakening! Some newspapers had to close down, and men in London who have handled and paid for thousands and thousands of tons of paper in their business life, for the first time in the remembrance of the present generation—aye, or in the past—advocated Canada's great possibilities. The daily and evening newspapers in London published articles on subjects which are past history in Canada. Men rushed to Canada to spy round, small dealings were effected; others rushed to Scandinavia. And what is really an important element in the 1920 history of paper is the fact that Americans were in London looking for newsprint. One may ask the question: Has Canada's resources gained by these after-dinner speeches in London and the great advice given to investors? When they were made I could see a smile breaking over the faces of some of the old pioneers, who know what it is to make and sell paper now, as in the past. Canadians know the result. Newfoundland kept up her steady supplies to England in her progressive mood. And what is the result of all this talk at the end of the year?

At the beginning of 1920 prices were good, labor conditions good, mills were enlarging, engineers were busy. At the close of the year labor conditions became serious, unemployment followed, wages had to be increased, and a depressed market followed. The Great War's reaction has set, prices are difficult to get and distress prevails. So far as one can see the year's cyclical movement leaves buyers not wanting paper the same as they did at the beginning of the 12 months, and newsprint is selling at a cheaper rate with foreign competing with the British, Newfoundland, and Canadian productions. Export is now the great object of British mills.

That was paper in 1920!

Pulp.

What of pulp in 1920, one may ask? It has been a good year for all kinds of pulp. The only trouble was that sellers could not get enough of pulp. So long as the paper industry was thriving, pulp men were busy, but owing to the increased cost in production many hard and difficult "battles" had to be contested with the paper mill owner. True, some of the paper men got upset, and said they would see about establishing their own pulp mills. It was said in the heat of the moment, because the paper man had a grumbling customer disputing his prices on one side, and, on the other, he was asked to pay a good increase in pulp prices and in a competing market. But the pulp man always came out "top dog" in these "battles." He has had his good fat days in the year; now he is on lean ones.

For comparison a glance back at pulp prices in the British market will be interesting. In January, 1915, or about the end of December, 1914, after war broke out, pulp producers had an anxious time, and prices were about as follows, c.i.f., British ports:—

Bleached Sulphite	£11	10	0	—	£14	0	0
Easy Bleaching	9	15	0	—	10	0	0
Sulphite News..	8	0	0	—	9	0	0
Unbleached Soda..	8	10	0	—	9	5	0
Soda Kraft..	8	5	0	—	8	5	0
Groundwood (moist) ..	2	0	0	—	2	5	0

These were some of the market prices at the beginning of 1915. Some buyers got more; others less. War then raged.

In January, 1920, as briskness was beginning to develop in the paper industry, and the questions of increased costs and increased prices were on the lips of every manufacturer one met in London, prices, c.i.f. British ports, were ruling as follows:—

Bleached Sulphite	£40	0	0	—	£		
Easy Bleaching	32	10	0	—	33	0	0
Sulphite News	23	15	0	—	24	5	0
Soda Kraft	26	10	0	—	27	0	0
Unbleached Soda..	9	0	0	—	9	0	0
Groundwood (moist) ..	30	0	0	—	30	5	0

In this comparison of prices one can see what the pulp and paper mill owners have had to contend with. The big jump after a little over 12 months' peace left things very uncertain. Pulp was up and labor was not too plentiful, and the markets of the world had to be considered. Pulp sellers, consequently, had to go very cautiously. Rumors got about that prices would be increased—they were in fact neary doubled in June, 1920. Then the hue and cry was raised about the prices of paper and the pulp men were attacked. All sorts of schemes were devised. But the revival in the paper industry and the grat demand for paper, made the pulp men busy. They lay low like sensible men, kept on selling a bit here and a bit there, and they enjoyed the great awakening in the activities of their paper confreres. Unfortunately, the depression has hit them somewhat today, at the close of a fair year, and the market prices are now about as follows, c.i.f. British ports:—

Bleached Sulphite..	£60	0	0	—	—		
Easy Bleaching	51	0	0	—	£52	0	0
Sulphite, News..	45	0	0	—	—		
Unbleached Soda..	41	0	0	—	42	0	0
Soda Kraft	38	0	0	—	39	0	0
Groundwood (moist).. ..	13	0	0	—	—		

Now comparing the cost of pulp today with that in January it will be observed that the difference is a big one. This difference has caused a good deal of hesitancy on the part of buyers in the United Kingdom, and they have been holding back large orders in the hope that prices might fall.

That was pulp in 1920!

Technical.

One cannot let the year pass without a reference to the Technical side of pulp and paper. Have we progressed? The answer may be given in the affirmative.

As regards pulp, further developments have taken place in utilizing bamboo as raw material and new machinery has been adopted. Peat has also been tried, and reports have been for and against it. Seaweed has been tested in England and elsewhere and reported on unfavorably, but in America it has proved a success, and a new mill is being established to handle it. Bagasse has also turned out successful, and machinery for grinding can be obtained in England. The results are all encouraging, particularly as one looks at the new efforts made in the Canadian and American scientific work in pulp making. A tribute must also be paid to the Canadian Pulp & Paper Association and the American for all they have done. They are closely followed in the United Kingdom.

Then the discovery was made that it was not a German who made ground wood first in the world and paper from it. It was discovered that a Nova Scotian Charles Fenerty, made it in 1838-1839, and to him the credit is given.

As regards paper, the British Papermakers' Association established a Technical Section in 1920, and it is going well. One knows what the Canadians and Americans have done to put new lines on the market and cheapen the cost of production. Scandinavians and the Germans are also steadily moving along on similar lines. The results of all these labors will be experienced in 1921. Paper is now made on a scientific basis, and we are in the same old world with a new people, better educated and more advanced in thought. Paper and pulp men must move accordingly. The Germans are doing it today, and the French and Belgians are raising new nations out of downtrodden ones who will in years to come study the economic position just as much as the Russians. In these great markets competition will be on scientific lines and their wants will reflect on the manufacturers' power of production. Science and reseach for tomorrow should be the motto; scrap the obsolete machinery.

Canada's Trade With England.

During 1920 paper and pulp imports in the United Kingdom might have been increased somewhat. The pulp produced in Canada has a good name in England, and the sooner this shipping difficulty has been got over and tackled the better for the Dominion. I hope next month to have a complete return of Canada's trade with this country. At present the figures are not available. One has only to look at the progress Newfoundland pulp and paper has made in the British market. Already some of the Canadian pulp and paper mills enjoy a nice connection with British clients, but the great desire is to see more mills interested in the market.

TWO MORE PULP MILLS.

Toronto, Jan. 24.—Two additional pulp and paper industries are in prospect for northern Ontario in connection with extensive pulpwood limits, which, according to Hon. Beniah Bowman, Minister of Lands and Forests for Ontario, will shortly be advertised for sale. One of these limits is tributary to the Nagagami river in Algoma, and so situated that the mills would probably be located north of the Transcontinental Railway. The other is in the vicinity of Long Lake, in the Thunder Bay district, south of the Transcontinental.

Don't worry about what people say about you. Think what might happen if they were mind readers.

Technical Section

REVIEW OF RECENT LITERATURE.

A-1. Preparation of methyl alcohol from lignin. EMIL HEUSER and HANS SCHMELZ. Cellulosechemie **1**, no.6, 49-58 (1920). Lignin is a by-product in the hydrolysis of wood to sugar by acids, and it is desirable to obtain means of utilizing it. The authors show that by heating lignin with 5.7 p.c. hydrochloric acid and under 5-6 atmospheres pressure (150-160°C) practically the whole of the CH_3O content of the lignin is split off as methyl alcohol. The yields obtained were acetic acid, 2.19 p.c., acetone 0.73 p.c. and methyl alcohol 14,83 p.c. 5 grams of lignin were heated with 30 cc. 5.7 p.c. hydrochloric acid, 2 hours at 5-6 atmospheres, and the residue again heated 2 hours under the same conditions. Four hours continuous heating gave about 13 p.c. methyl alcohol while heating at atmospheric pressure gave a yield of only 2.56 p.c.—C.J.W.

A-1; B-O. Paper pulp supplies from Chile. J. Royal Soc. Arts **68**, no. 3544, 769-771 (1920). Among the trees, whose wood is suitable for papermaking, are the wild bamboo (coihue or quila), conifers, as the alerce and cypress, and the Chilean pine (Araucaria). There are about 10 million acres of primeval, heavily timbered country covered with these trees. Much of this land is under governmental control and cooperation could be counted upon. Water and water power, ready access to sea transport and good if not plentiful labor are among the advantages; the disadvantage is the heavy rainfall in certain sections.—C.J.W.

A-6; E-2. The composition of sulfite coal (Strehlenert). HANS KRULL. Cellulosechemie **1**, no. 6, 58-59 (1920). Two samples of sulfite coal, prepared according to Strehlenert's directions, gave the following numbers on analysis: moisture, 9.24, 6.34 p.c.; ash, 9.80, 35.45 p.c.; carbon, 54.64, 34.66 p.c.; hydrogen, 4.77, 4.10 p.c.; heating value, 5,424, 4,151; heating value of dry and ash-free product, 6,700, 6,000. These figures correspond to emperical formulas 1, $(C_{16}H_{17}SO_3)_x$; 2, $(C_{11}H_{16}S_2O)_x$; when these are compared with the formula for the sulfonic acid of lignin, $C_{40}H_{44}O_{17}S_2$, it is evident that considerable carbonization of the liquor has taken place.—C.J.W.

B-4. Preparation of alcohol from wood. EMIL HEUSER. Cellulosechemie **1**, no. 5, 41-46 (1920). A lecture, reviewing the present processes.—C.J.W.

D-4. Grinding apparatus for the manufacture of woodpulp. U. S. patent No. 1,342,231, P. C. SCHAANING, Vestre Holmen, near Christiania, Norway. Paper **28**, (July 14, 1920). In a grinding app. for the manuf. of woodpulp, the combination of a grinding stone, a compartment for receiving wooden blocks to be ground, said blocks forming a column to be pressed against the stone, a reciprocable forward-pressing device operating members gripping the faces of the blocks, and a supplying device or hopper for effecting refilling of blocks into said compartment and arranged to feed the blocks in a direction more or less across to the forward-pressing direction into the space behind the blocks of the column gripped by the gripping members and according to the movement of the latter towards the stone, whereby the said space will remain constantly filled with blocks forming an extension of the block column. Claims allowed 24.—A.P.C.

E-2. Method of and the means for the de-acidification if raw wood-pulp liquor. B. GRATZ. English Patent 150,571. Nov. 26, 1919. The liquor is allowed to flow along a trough through which the ashes from lignite or other brown coals are transported in an opposite direction by means of a mechanical conveyor. The cost of neutralization is small, and the liquor obtained may be used for preparing artificial stone. —C.J.W.

E-2. The determination of methyl alcohol in sulphite spirit. EMIL HEUSER and ASCHKENASI. Papierfabrikant **18**, no. 33, 611-615 (1920). The method of Konig is used. 50 grams of potassium bichromate and 50 cc. sulfuric acid in 500 cc. water are heated 1 hour, and cooled 25 cc. of the dilute alcohol (equal to about 3 grains of pure alcohol) are run into a flask which is connected with a carbon dioxide absorption train, and then the cooled chromic acid solution. After standing over night, it is heated to boiling for 1 hour and carbon dioxide free air then passed through for an hour. The weight of CO_2 found, multiplied by 0.728, gives the content of methyl alcohol.—C.J.W.

E-2. Concentration of sulfite and sulfate waste liquors by freezing. Ger. patent No. 316,592, E. OMAN, June 26, 1917. J. Soc. Chem. Ind., **39**, 483A, (July 15, 1920). The liquors are kept agitated and subjected to a temp. below their solidification point, any snow or ice crystals formed being removed by filtration or centrifuging. Portions of liquid adhering to the crystals are dild. The low temp. of the crystals, as well as of the concd. liquors, may be utilized for cooling further quantities of liquor. The concn. of the liquors may be increased to 40 p.c. by this method.

F-2. Process for treating soda-cellulose waste lyes. H. ACHENBACH. German Patent 322,771. Feb. 16, 1919. The waste liquor passes down a tower, in which it is concentrated from about 5°Be (sp. gr. 1.037) to about 10° Be (sp. gr. 1.075) by means of furnace gasses. It can then be evaporated in the usual apparatus without frothing.—C.J.W.

K-6. Preparing cellulose from peat for the manufacture of paper and cardboard. Papierfabrikant **18**, no. 36 and 37, 663-667, 683-689 (1920). A review of practically all the German patents granted for the utilization of peat in the paper industry.—C.J.W.

K-4. Method of manufacturing paper barrels. U. S. patent No. 1,340,110, R. S. BOLGER, New York, N.Y., part Assignor to Geo. F. Whistler, Brooklyn, N. Y., U.S.A. Paper, 26, (July 14, 1920). The method of manufg. bilged barrel bodies of a continuous unbroken web of paper, which consists in longitudinally stretching said web between the side edges thereof, the latter remaining relatively shorter than the stretched portions, then longitudinally wrapping the same upon itself into bilged barrel formation, and interposing relatively narrow strips of flexible materials between the convolutions of the web during the wrapping of the web around the mandrel. Claims allowed 8.—A.P.-C.

K-8. Color solution tank. Paper, **22**, (July 14, 1920). The app. consists of a cylindrical tank with an inlet pipe for hot water which takes on a centrifugal motion on entering. A solid cone is in the center of the bottom to prevent any coloring from lodging there. The soln. remains about 0.51 min. before leaving the tank from the upper outlet when the hot water supply is shut off and the valve opened on the lower outlet to drain the tank completely. Both outlets are joined into 1 T-fitting below which is an 85-mesh sieve to strain the soln. as a final precautionary measure. The T-fitting on the upper outlet is equipped with a nipple for the attachment of a cold water hose to dil. and cool down certain color solns. (basic anilines) in order to prevent a granite effect. The inlet pipe is equipped wth a thermometer in order to regulate the temp. of the hot water, as s necessary in certain cases (auramine). The length of time required for the operation has been reduced 50 p.c.—A.P.-C.

K-11. Paper drier. JOHN E. ALEXANDER. Paper, 29, (July 21, 1920). The invention comprises an inclosed drier unit having electrically heated elements disposed so that the web is dried by being carried upwards by belts of varying wire mesh, between the heating elements, and out of the upper portion of the drying unit.—A.P.-C.

K-11. Paper roll support. U. S. patent No. 1,341,862, E. L. REED, Sterling, Ill., U.S.A. Paper 28, (July 14, 1920). A device comprising a frame provided with a cross-bar; a clip secured to the lower face of the cross-bar and provided with the resilient side-plates; an arm pivoted in said-clip; a spring in engagement in said arm and tending to force it downwardly; and bosses projecting inwardly from said sideplates ,adapted to engage the arm and hold it releasably in elevated position. Claim allowed 1.—A.P.-C.

K-10. Process of preparing pulp having wax-impregnated fibers. U. S. patent No. 1,344,620, F. B. DAVIDSON, Assignor to National Biscuit Co., New York, N.Y. U.S.A. Paper, 26, (July 14, 1920). The process of preparing pulp having wax impregnated fibers, consisting in mixing together papers having waxed and unwaxed portions so as to have enough waxed fibers to impregnate with the wax liberated from the waxed portions of the papers substantially all the unwaxed fibers that may be present in the mixt., adding enough water to reach all parts of the mixt., and cooking and agitating the mixt. under steam press. to soften the fibers of the papers and the wax and cause the latter to be forced into the fibers of the papers. Claims allowed 4. —A.P.-C.

K-14. Angle-gage attachment for paper-cutting machines. U. S. patent No. 1,345,033, H. STENGEL, Assignor to A. J. Otten, Los Angeles, Cal., U.S.A. Paper, 24, (July 14, 1920). An angle gage attachment for paper cutting machines having a straight back gage including vertical ribs; the attachment comprising outer attaching blocks having notches adapted to receive the ribs, set screws in the outer attaching blocks to engage the ribs, a central attaching block having a notch to receive a rib, set screws in the central attaching block to engage opp. sides of the rib, angle gage plates pivotally connected to the central attaching block links pivotally connected to the angle gage plates and bearing upon the outer attaching blocks and having longitudinally extending slots, and cap screws inserted through the slots and tapped into the outer attaching blocks; so that by manipulating the cap screws the angle gage plates may be adjusted. Claims allowed 3. —A.P.-C.

K-18. Drying of pasteboard. Paper **24**, (July 14, 1920). HUBERT EICHEN, Grevenbroich, Germany. A patent on drying sheets of pasteboard by having them pass through horizontal drying galleries on endless chains. An innovation is the elimination of stationary partitions, these being supplanted by the cardboard to be dried. It is claimed this reduces building costs materially. The sheets are hung alternately crosswise and length-wise, so that they receive the air currents in alternating directions. It is claimed this accelerates the drying process.—A.P.-C.

K-20. Process for parchment paper and vulcanized fiber. Fr. patent No. 500,504, The Manchester Oxide Co. Ltd., Dec. 18, 1919. Paper, 17, 24, (July 21, 1920). Same as U. S. patent No. 1,333,465. Paper, **26**, 235, (1920).—A.P.-C.

K-11; K-23. Paper machine for the manufacture of narrow strips of paper. Fr. patent No. 505,686, TURK GESSELSCHAFT m.b.H., Germany. Papeterie, **42**, 925-6, (Oct. 25, 1920). Narrow discs are placed side by side, but a small distance apart, and are made to act on the wire of the machine between 2 of the guide rolls so as to produce trough-like depressions in the wire. As the wire travels the fibers are deposited in the spaces between the discs, so that when the wire emerges from under the discs it carries strips of fibers having clean-cut edges and uniform width and thickness.—A.P.-C.

K-14. Paper winding and unwinding. Br. patent No. 144,485, T. LOVE, London. Paper, **27**, No. 6, 30, (Oct. 13, 1920). The paper is supported by spindles and rolled on to a drum. Several successive lengths may be rolled, such as end remaining on printers' reels, that may later be used as posters, bills, etc. The roll on to which the paper is wound has a wire resting in a groove in its periphery. By drawing the wire through the paper, sheets of a given length can be cut according to the adjustment.—A.P.-C.

K-23. Waterproofing and hardening cellulose and its products. Br. patent No. 145, 610-119, F. MOELLER, Cassel, Germany, Sept. 1, 1920. Chem. Met. Eng., **23**, 990, (Nov. 17, 1920). Pure cellulose such as cotton, cellular tissue and papers and cardboards made therefrom are hardened and rendered water-resisting by treatment with thionyl chloride. Indiff. solvents for the thionyl chloride, such as chloroform, carbon tetrachloride, benzene, etc., may be used. A better parchmentizing effect on paper is produced by exposing the paper, after treatment if necessary in vacuum, to the vapors of thionyl chloride. Continued treatment renders paper absolutely impermeable. It is desirable, after treatment, to wash with water or dil. alkali, or to treat with dry NH_3 gas.—A.P.-C.

K-23. Process for rendering cardboard, paper, and paper fabrics grease—and water-proof. Ger. patent No. 316,527, L. BUCHBINDER, March 19, 1919; addition to 306,028. J. Soc. Chem. Ind., **39**, 653A, (Oct. 15, 1920). Cardboard which has been coated with a glue ppt. containing a filling material, in accordance with the chief patent (see J. Soc. Chem.. Ind.; **37**, 575A, 1918), and dried, is further coated with a mixt. consisting of a satd. soln. of tannin and resin in spirit and a varnish containing a drier, to which mixt. Zn white and formaldehyde have been added.—A.P.-C.

UNITED STATES NOTES

FOREST CONSERVATION FAVORED AT WASHINGTON.

At hearings held last week before the Committee on Agriculture of the House of Representatives much testimony was adduced in favor of the Snell forestry conservation bill. Through this measure it is proposed to halt reckless forest devastation, substituting scientific cutting and planting and the application of a comprehensive policy of control over woodlands that embodies the best experience of France and Germany. The bill includes also a provision for an annual appropriation of a million dollars to be spent in cooperation with the States in fighting forest fires, and for ten million dollars a year for the purchase of additional forest lands. The bill received vigourous support from numerous forestry experts and other authorities on woodlands. Among those called upon to express their views with regard to the proposed legislation were the following: Philip Ayres, secretary of the New Hampshire Forestry Society; Wm. B. Greeley, Chief Forester of the United States; Alfred Gaskill, State Forester for New Jersey; R. S. Kellogg, of the News Print Service Bureau; E. E. Carter, Assistant U. S. Forester; E. Parsonage, president of the Association of Wood Using Industries; Elbert H. Baker, publisher of the Cleveland "Plain Dealer"; Charles Lathrop Pack, president of the American Forestry Association; Col. Henry S. Graves, former Chief Forester; George W. Sisson, Jr., president of the American Paper and Pulp Association, and E. T. Allen, representing the Western Forestry Conservation Association and the National Lumber Manufacturing Association. Testifying as a lumberman and in behalf of the Pacific Coast timber owners, Mr. Allen's stand in favor of the bill is significant inasmuch as it shows that the lumbermen, who in the past have been perhaps too ready to denounce all plans for forest regulation, have awakened to the serious position in which forest depletion has put their own industry.

Mr. Kellogg's Remarks.

R. S. Kellogg, discussing necessity of inventory of nation's forest resources, before congressional committee in hearing on Snell forest bill, said:—

"We are using 125 pounds of paper per capita yearly in the United States, and our pulp wood supply is rapidly dwindling, but no one knows how much we have, nor where it is the best national economy to produce the future supply, said R. S. Kellogg, representing the American Paper and Pulp Association, the parent organization of the United States paper industry, and also chairman of the National Forestry Program Committee, the coalition of manufacturers, converters and consumers of wood products which is sponsoring the Snell bill.

"We are told that there is no other material on earth so good as hickory for vehicle manufacture, yet we do not know enough about the present supply, the requirements of the industry, nor how to produce a future supply, to enable us to tackle the problem with any assurance of success.

"These are the reasons why we believe that an inventory is the first requisite in this business undertaking. Sound financing and management are impossible without stock taking and inventories must be periodically revised. This is why the provision for a survey of the nation's forest resources is asked by the so-called Snell bill.

"A forest inventory and a census of timber requirements are fundamental to any adequate plan for forest production and utilization. We must find out what we have, where it is, how fast it is growing, how rapidly it is being used, and what we might have if all forest soil were put to work. We don't know where we stand now. We must know if we are to tackle the problem of continuous forest production on an adequate scale and in an intelligent fashion."

President Sisson's Statement.

George W. Sisson, Jr., President of American Paper and Pulp Association, said:—

"The American Paper and Pulp Association, the parent association of the paper industry in the United States, desires to be recorded in favor of the Snell forestry bill, not alone because the paper industry is dependent for its future existence on a continuous supply of raw material from the forests but because this Association believes it best for the nation as a whole," said George W. Sisson, Jr., of Potsdam, N.Y., president of the American Paper and Pulp Association.

"While in the last analysis the problem of the paper supply is the problem of the timber supply, it should be noted that the manufacturing of paper is but one of the many methods of forest utilization and that the total demand for timber for other purposes exceeds many times that for the making of paper, this industry using only about 8 percent of the annual cut of timber.

"The paper industry touches so closely the daily lives of the people and reaches such a condition of indispensibility in our modern life, that we must approach the problem of its raw material supply with a strong consideration for the public interest involved, and with a determination that our efforts in the interest of the public shall be so widely directed that no minor consideration or controversial attitude may interfere with the successful result.

"In this spirit the American Paper and Pulp Association approves the policy now proposed, because it appears to be a fair adjustment of the respective rights of the timberland owner, the manufacturer, the converter and consumer of forest products, which latter is the general public.

"The relation of the paper industry to forestry is being daily realized as more and more vital. With the great sums involved in the paper manufacturing plant investments, the paper industry is willing to do more than its share toward providing a future supply of raw material. But the public must do its part, protect its own forests from losses by fire, and must not impose upon the timberland owner such conditions of taxation and operation that his only salvation is deforestation. All he asks is a chance to reforest. We believe this bill properly apportions the task between federal and state governments and private owner.

"Speaking for the manufacture of pulp and paper, let me give assurance of our entire readiness to assume obligation and render full measure of service in the practical execution of a program that will be continent wide in its scope, all-embracing as to wood-using industries, and dedicated in its last analysis to the permanent service of all the people."

A Good Investment.

William L. Hall, Chicago, speaking in favor of federal acquisition of forest land, said:—

The United States should lay out for itself the program of acquiring a million acres a year of deforested or cut over lands, and building these lands into its system of national forests. The widening of purchases under the Weeks law should and will be subject to special consideration because of the appropriation involved. Before the war appropriations were made at the rate of $2,000,000 a year for the purchase of lands for national forests at the headquarters of navigable streams. It is proposed now to increase the amount to $10,000,000 a year and remove the restrictions of limiting purchases to the water sheds of navigable streams.

No matter what plan of forestry may be adopted, Government-owned forests must be the nub of the plan. It is to them that the nation must look for the best development of forestry. They are the centers of fire protection and the centers of influence in the better handling of private timberlands in the regions around them. They must be located in all timber regions. The National Forests of the west, with all their barren, inaccessible and burnt over areas, have now become self-supporting. The National Forests in the East, purchased at a cost of over $11,000,000, are now worth more than double that amount. They are good investments.

The moment the true nature of the reforestation problem is understood it is clearly seen that it would be most unwise to try to put it off. Delay increases the cost out of all proportion to the time involved. Especially is this true in acquiring lands. In 1900, when the question of acquiring forest lands in the Appalachians was first agitated virgin timberlands could have been bought at the price paid today for cutover lands. In 1911 when the Weeks law was passed the opportunity was not as great as ten years before, but it was better then than it is today. It is better today than it will ever be again. We must start on this program at once or the costs become simply appalling.

It has been reported to congress that in the United States are 81 million acres of lands formerly timbered and still capable of producing good timber, but now barren and to remain in desert-like condition until they are replanted to trees. The cost of allowing such lands to accumulate is tremendous. Assuming no cost for the land, and considering only the cost of planting trees and protecting the planted trees from fire, their cost will be not less than $40 at the end of thirty years.

Walter E. Trum of E. J. Trum, Inc., Brooklyn, was elected president of the Metropolitan Paper Box Manufacturers Association at the recent meeting of that organization held in the Hotel McAlpin, New York City. Other officers chosen were William H. Casselman of T. & E. Casselman, Inc., New York, vice-president and Robert M. Zoller of Schenck & Schlichte, Inc., New York and Newark, treasurer.

A resolution calling for an investigation by the Federal Trade Commission of print paper supplies and prices was introduced in the Senate last week by Senator Harris of Georgia. The Senator, who was a member of the commission when it investigated the news print industry in 1918, asserts that there is no real shortage of print paper at present. He claims also that white paper is being offered in the open market at a lower price than that covered by contracts with the big companies who usually control the situation, and that despite this the newspapers are forced to make contracts for 1921 with the right of the paper company to fix its own prices subject to quarterly readjustment.

A layoff affecting 100 employees in the offices of the American Writing Paper Company went into effect beginning February 1. The foremen employed in the company's plants have been transferred from a salary to an hourly wage basis.

The United Paperboard Company reports net earnings for the six months ended Nov. 27, 1920, of $1,002,985 before depreciation and income taxes, as compared with $165,807 in the corresponding period of 1919.

Six of the twelve paper mills in the Kalamazoo district have put into effect wage reductions approximating 17 per cent.

Herbert Hoover, former United States Food Administrator, and Julius Barnes, former head of the Grain Administration, have formed a holding company to take in several industrial enterprises in which they are jointly interested. The new company, to be known as the Intercontinental Development Company, will control the Washington "Herald", a large block of the stock of which is controlled by Mr. Hoover. It will control also the Pejepscot Paper Company of Pejepscot, Me., and the Clearflax Rug Company of Duluth. The former has important holdings in Maine and Canada. It is trying to reforest lands as they are cleared and to use water power on its properties.

Newspapers now printed in black and white may have to appear in colors unless the several States that furnish black ink withdraw legislation designed to bar the use of natural gas in the manufacture of carbon black, the pigment used as a basis for printing inks. Wyoming, Louisiana and West Virginia, the three States now turning out the world's main supply of carbon black, are considering measures prohibiting the transformation of natural gas into carbon products and conserving it for domestic use.

L. L. Alsted of Milwaukee and A. J. McKay of Appleton, Wis. have been granted a charter in Wisconsin for a new concern to be known as the Valley Pulp Company. They have just completed a deal for the big paper plant of the Kaukauna Pulp Company at Kaukauna. Several weeks ago they purchased the Lakeside Paper Company's mill at Neenah. Both these plants will be operated for the Valley Pulp Company. Improvements are being planned in each mill with a view to effecting a material increase in their output.

Ironsides Board Corporation, Norwick, Conn., is now entirely owned by the Shuttleworth- Keiller Co., of New York. The firm has purchased all of the stock of the company formerly owned by the American Straw Board Company and Mr. A. G. McIntyre. Mr. McIntyre devotes his whole attention now to the management of the Bear River (N.S.) Pulp & Paper Co.

PULP AND PAPER NEWS

The Ontario Government will, in the near future, advertise two rather extensive timber limits in Northern Ontario as being for sale. One is tributary to the Nagagami River in Algoma, and the other near Long Lake in the Thunder Bay district. Both will be sold subject to conditions regarding the establishment of pulp and paper mills. Water power concessions go with both. The first limit mentioned will have the electrical development north of the transcontinental railway available for paper manufacture. The other limit is south of this railway. Both are west of Hearst, and both are now being cruised for the Government.

Word from Port Arthur is to the effect that the Kaministiquia Pulp and Paper Company's new mill in that town went into complete operation on Jan. 24th. The slasher mill has been running for a couple of months and has prepared 1,500 cords of pulp wood for the grinder mill and the wet room, which latter has also been started. The company has its output sold for six months ahead. Plans are under way for increasing the present capacity of 80 tons per day to 100.

The Digby Weekly Courier of Jan. 7th just to hand contains an interesting write-up concerning the possibilities of the development in Nova Scotia of the pulp and paper industry which was inspired by the fact that Messrs. Clarke Brothers new mill at Victoria Bridge is rapidly nearing completion and will be in operation in a few weeks. It is pointed out that while paper has been made in Canada for more than 100 years, the second paper mill in Canada was built in Nova Scotia, at Bedford Basin, in 1818, by R. A. Holland, who at that time was the publisher of the Halifax Record. So late as 1881 the census showed Canada at that time to have had only five pulp mills, with an invested capital of $92,000, employing 68 people and having an annual output of valued at $63,000. Ten years later 24 mills were operating with a capital investment of $2,900,907, employing 1,025 people and with an annual output valued at $1,057,810. Today there are $260,000,000 invested in pulp and paper mills in Canada.

The death took place at Oshawa, Ont., on Jan. 24th, of Edward Mundy, president of the Reformer Printing & Publishing Company, a pioneer newspaper man of Ontario County, who had reached the advanced age of 84 years. Deceased served his apprenticeship with the Toronto Globe and in his young days he worked on several of the Toronto papers and at one time ran a paper at Prince Albert, Ont. He went to Oshawa 32 years ago and in 1910 he retired from the editorship of the Ontario Reformer which he had purchased in 1878.

Hon. G. Howard Ferguson, in the Ontario Legislature, has moved that a return be made to the House of all correspondence between the Minister of Lands and Forests, the Prime Minister or any member of the Government and E. W. Backus, or any other company, firm or person, together with all estimates, reports, advertisements, conditions of sale, tenders, agreements, maps, documents and papers of every kind relating to the Lake of the Woods pulp concessions, the White Dog Rapids water power or any other water power in the district of Kenora, and the recent sale of pulpwood and timber on the English River concession.

Mr. Fred Ratcliff, of the Ratcliff Paper Company, and Mrs. Ratcliff, leave next month on a combined business and pleasure trip to Bermuda.

Among the outside paper men in Toronto this week were Mr. P. B. Wilson, Vice-President of the Spanish River Pulp and Paper Mills, Limited, and the new President of the Canadian Pulp and Paper Association; Mr. R. I. Worrel, head of the pulp sales department of the George H. Mead Co., Dayton, Ohio, and Mr. E. H. Macklin of the Manitoba Free Press.

Mr. Robson Black, secretary of the Canadian Forestry Association, delivered an interesting address before the Kiwanis Club at the King Edward Hotel in Toronto last week on "Canada's Timber Wealth."

The Toronto Board of Trade was addressed on Jan. 26th by Hon. Beniah Bowman, Minister of Lands and Forests, on "Ontario's Forests."

The Hinde & Dauch Paper Co. of Canada, who have a large plant in Toronto, have increased their capital stock from $250,000 to $625,000.

The Howell Lithographing Company, Toronto, has increased its capital stock from $49,000 to $500,000.

A charter has been granted to the Nelson Press, Limited, Toronto, with a capital stock of $100,000 and headquarters in Toronto and with power to carry on the business of printers, publishers and manufacturers of wall paper, envelopes, etc.

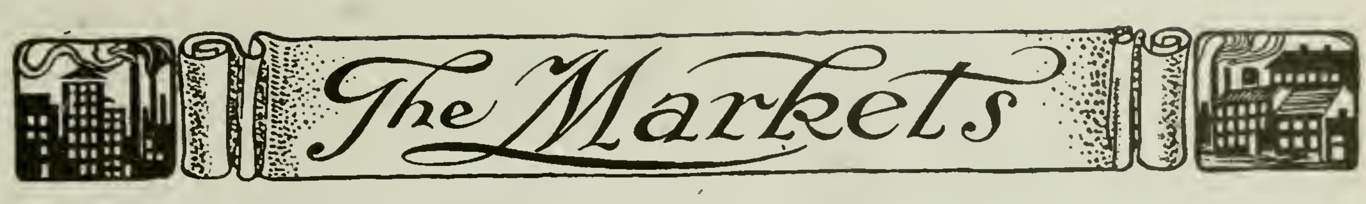
Messrs. Ritchie and Ramsey have resumed operations at their paper coating mill at New Toronto after installing a new overhead hot air drying system and building what is practically a new color house, as well as carrying out other renovations.

Hon. Beniah Bowman stated in Toronto last week that a bill would be introduced in the Ontario Legislature at the present session making it possible for the department to carry on an extensive scheme of reforestation and making it possible for individuals, municipalities or corporations to reforest. The scheme will apply to the whole province.

The death took place in Toronto last week of Mr. Louis V. Bouvier, father of Mr. L. P. Bouvier, of Bouvier & Hutchinson, envelope manufacturers, Toronto. Deceased was one of the oldest men in Ontario, having reached the age of 102 years.

Canadian S. K. F. Co., Toronto, has issued an interesting bulletin showing how ball bearings are applied to pulp grinders and Jordan engines. The former use involves the problem of keeping water from the bearing and the latter has to provide for a heavy thrust.

The Miramichi Lumber Company is the largest operator in their section, but is confining its efforts chiefly to pulpwood. The Partington Company is also getting out a large quantity of pulpwood this season.



The Markets

CANADIAN TRADE CONDITIONS

Toronto, Jan. 29.—Business in pulp and paper circles is unsettled and of rather small volume and while manufacturers and jobbers are convinced that the next month or two will see a change for the better, there is undoubtedly at present a depression in the trade such as is being experienced in other commodities of constant consumption. Here and there one hears reports of improved business conditions but they are not very general. The concensus of opinion in the paper trade is that manufacturers and jobbers will have to be content to take considerable losses for a time and that they will have to reconcile themselves to small orders at reduced prices. This condition has been prevailing for some weeks, and, according to several paper men interviewed this week, there is no immediate prospect of a betterment of the situation. In one or two instances it was reported that buying had shown signs of resuming, but on a small scale. During the past week there has been very little reduction of the big stocks of paper on hand in the Toronto warehouses, although salesmen are out, as in the old days before the boom, trying to place orders, but printers are not stocking paper and are only buying from hand to mouth. They report a lull in advertising output and will not stock up beyond their immediate requirements. Then, too, there is the falling market to contend against which is a bg factor in the decreased volume of business being done at the present time. Book, ledger and bond paper manufacturers and the jobbers are still conferring in an endeavor to get at a stabilized price-list and this branch of the trade is still in a very unsettled condition. In the meantime some lines of fine papers the jobbers used to pay twenty cents and more for can now be obtained for seventeen cents and less.

IMPORTS.—Sales representatives of American importing houses report that very little paper is being imported into Canada. There were considerable imports of board until the recent reduction in price by the Canadian mills and the same holds good of bonds and ledgers. There are a few lines of paper not made in Canada that are coming in but the consignments are very small.

MAY BE CURTAILED PRODUCTION—In pulp and paper circles there is considerable speculation as to whether or not the plans made for a big increase in pulp production this year will materialize. During the old year many new companies were organized for the manufacture of pulp and paper and quite a number of the old companies have enlarged their plants and have announced further expansion as being likely. But there have been falling prices in both pulp and paper lately and in consequence the opinion prevails in some quarters that not only will some of the operating companies fail to put their expansion plans into effect but that some of the new companies have failed to receive the necessary support which would warrant them in going ahead. It is generally believed, however, that whatever abandonment of plans has taken place, it is only of a temporary character and that expansion in accordance with the original program will be gone on with as soon as the present lull in business is over. The opinion seems to prevail that the present year will not see the big increased production promised last year.

MANILAS DOWN.—In addition to the reduction of "B"manila to 9c and No. 1 to 11c. announced last week, a reduction of approximately ten per cent in manila bags came into effect this week. The discounts on manila bags are now 50, 10 and 5 per cent. Kraft discounts are now 60, 2½ and 5 per cent and on white bags 45 and 5 per cent. The wrapping paper trade is keeping up fairly well although the orders are coming in are of rather small dimensions.

PULP.—The market for pulp is still dull. There are no stable quotations and enquiries there are mostly feelers to find out just how the market lies. Some of the mills which made pulp at a high cost last year are said to be holding their product for a rise in the market. However that may be there is very little moving and what sales are being made are at reduced prices. The outlook, however, is bright for a stiffer market. It developed at the boot and shoe convention in Toronto this week that the trade is due for big development, which will mean more boxes and consequently more pulp. Ladies wear and other lines requiring boxes are in for a boom which will naturally affect the box board and pulp industries. Groundwood pulp can be bought now anywhere from $75.00 to $90.00 per ton, while bleached sulphite is quoted at from $130 to $140. Unbleached sulphite rules at about $100.

LIGHT WEIGHT PAPERS. — Manufacturers of tissues and toilets report a better demand than is characterizing most lines of paper. They say that trade is gradually picking up and buying is considerably freer than at any time since the slump set in. There was a reduction in toilets this week representing five per cent. Tissues remain unchanged.

RAG AND PAPER STOCKS. — There has been a notable increase in enquiries from paper mills for new cotton cuttings, but, according to local dealers, this is where the improvement ends, as only a small amount of actual business has been done. Paper manufacturers are sounding the market to detect soft spots, and are buying only where sacrifice prices are obtainable. Dealers are of the opinion that while some lots of cuttings may be bought under the present levels, most of the grades, as a general rule, are held for full price where any quantity is considered. The prices on cuttings have been unchanged since last quotations. Old cotton rags have shown no improvement, the market being still nominal. The larger dealers report business absolutely at a standstill, but they are in hopes that Spring will bring a renewal of business in this line. Contrary to previous predictions No. 1 mixed papers seem to have strengthened considerably. Good packing has advanced from $3.00 to $4.00 per ton, while there is yet very little business for large tonnages, yet dealers feel that a ray of light has been cast on the waste paper situation. The general firmness with which wood pulp prices have been holding the past few weeks has been the chief factor leading to the belief that waste paper prices are too low, and as soon as mills begin to use normal quantities, a sharp advance will be noted in prices. Books and ledgers are unchanged in price with demand in the same proportion as last week. Kraft is slightly weaker, following up a downward trend in American prices. White blanks have also eased off a little, which has lowered the price of manila cuttings.

	Per Cwt. F.O.B. Toronto
No. 1 shirt cuttings	$18.00—$19.00
No. 1 unbleached cotton cuttings	11.50— 12.00
No. 1 fancy shirt cuttings	9.00— 9.50
No. 1 blue overall cuttings	8.00— 9.00
Bleached shoe clip	11.00— 12.00
White cotton hosiery cuttings	14.00— 15.00
Light colored hosiery cuttings	11.00— 12.50
New light flanellette cuttings	11.50— 12.00
No. 2 white shirt cuttings	8.50— 9.00
City thirds and blues (repacked)	1.90— 2.00
Flocks and satinettes	.80— .90
Tailor rags	.60— .70
Gunny bagging	1.10— 1.20
Manila rope	3.75— 4.00
No. 1 white envelope cuttings	6.75— 7.00
No. 1. soft white shavings	6.00— 6.50
White blanks	2.25— 2.50
Heavy ledger stock	3.50— 3.75
No. 1 magazine	1.90— 2.00
No. 1 book stock	1.75— 1.80
No. 1 manila cuttings	2.25— 2.50
No. 1 print manila	.75— 1.00
Folded news	.75— .80
Over issue, news	1.30— 1.40
Kraft	2.25— 2.75
No. 1 clean and mixed papers	.50— .60

NEW YORK MARKETS.

New York, January, 29.—(Special Correspondence.)—Trade activity in paper continues narrow in scope. Consumers have not altered their buying policy as yet and are absorbing merely such quantities of paper as are directly required, with the result that aside from the contract movement of supplies very little paper is being shipped by mills to consuming centres. There is business passing, of course, but the total volume of buying at present is so far below normal that current market transactions have practically no influence on values.

The situation is at best a very irregular one. Most manufacturers are not pressing customers to buy, doubtless figuring that action on their part in this direction would only serve to make buyers hold off to a greater degree than they are. Moreover, there is a feeling of confidence among paper producers that demand is not likely to remain dormant for long. Plenty of signs are visible of a revival of industry in many lines on which the paper trade largely depends. As would be expected in a market such as now exists, there are some paper manufacturers who are cutting prices in an effort to underbid competitors and obtain business. This is not a common practice with the trade at large, but the fact remains that some are indulging in such tactics, with the consequence that prices are surrounded by uncertainty.

Changes that have developed in quotations during the present week have been, with rare exceptions, in a downward direction. No sharp recessions have occurred yet there have been transactions recorded at lower levels, and obviously buyers are seeking out supplies which can be secured at concessions.

Reliable information is to the effect that spot newsprint is selling at a further reduction. Business has been reported in standard rolls for prompt delivery at 6.50 cents a pound at mills, and there has been some talk in the trade of sales down to 6.25 cents. It appears doubtful, however, that any worthwhile tonnage can be bought at these figures. The recognized market level is still 7 cents and the probabilities are publishers must pay close to this figure to obtain sizable shipments. It is becoming more and more apparent that there is quite a supply of imported newsprint in this market that remains unsold and it would seem that owners of these stocks are granting sharp concessions in price in their efforts to find buyers.

Another branch of the market which has eased off slightly is book paper. Actual sales of machine-finished book have been recorded at 10.50 cents per pound f.o.b. mill. It is stated that Eastern manufacturers are holding out for at least 11 cents, and that this price constitutes the market basis, but some mills in the Middle West are known to have accepted orders for at least a limited tonnage at 10.50 cents. Super book has sold at 12.50 cents at mills, although a more representative price on this grade is also a half cent higher. A majority of book mills have enough contract business on file to keep them engaged most of the time but in an effort to secure additional orders so as to enable them to run full time, some are shading quotations in getting business away from other manufacturers.

There is little change in the fine paper situation. Quotations are fairly well maintained and a moderate movement toward consuming centres is reported. Wrappings and tissues are quiet but are holding in price, with the exception of No. 1 domestic kraft wrapping which has sold down to 9 cents a pound at mills this week, denoting a slight decline.

Demand for chip board appears to be gradually expanding notwithstanding that buyers are following a very cautious course, and mills are reported securing a fair number of orders. Prices on plain chip range around $50 per ton f.o.b. mills, while news board is quoted at $55 to $60.

GROUND WOOD.—The mechanical wood pulp market is in a quiet position and prices show a softening tendency which is rather unusual for this season of the year when ordinarily consumers are buying freely and when prices trend upward because of the reduced operations of grinders. The present situation is due to the lack of demand. Board manufacturers are buying in sparse amounts, and other transient buyers are mostly out of the market, so that sellers in frequent cases are cutting prices in an effort to stimulate demand. Around $80 a ton at grinding plants is the approximate market values of No. 1 domestic ground wood, and yet there are offerings at intervals considerably under this figure, down to as low as $60 having been talked of in some quarters. It is doubtful whether any tonnage of consequence can be obtained under $80 but it is true small lots are selling for less. Importers are quoting between $80 and $85 a ton ex the dock and assert that their offers are meeting with a comparatively good response from consumers.

CHEMICAL PULP.—There is little important life to the chemical wood pulp trade. Papermakers are coming into view as buyers only spasmodically and even then they are absorbing but light amounts of

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pulp, and while a majority of producers and importers are sitting tight waiting for demand to revive, some are offering supplies at sharp recessions from the prices recognized as approximate market levels. It is indeed difficult to get a definite line on values under prevailing conditions. Owners of stocks are mostly themselves at a loss what to say constitutes prices, and so few bids are being registered on round quantities of any grade of pulp that it is largely a matter of guesswork to say what prices are.

Domestic bleached sulphite is available in at least some quarters at 7.50 cents a pound, and probably for less, while domestic easy bleaching sulphite is offered at 6.50 cents, news grade sulphite at 5 cents and domestic kraft down to 4.75 cents. There is relatively a firmer tone to quotations on foreign pulp, due to importers' contentions that the high cost of replacement in Scandinavia prevents them from lowering prices. Imported bleached sulphite is quoted at 8.50 to 9 cents per pound ex dock, unbleached sulphite of No. 1 grade at around 6.50 cents, easy bleaching at 7 cents and kraft at 5.25 to 5.50 cents.

RAGS.—Papermaking rags are sought by mills in most instances only in limited-sized lots and there is little feature to the market. Still there is a fairly steady tone to prices. Dealers and packers are confident in their belief that values have about touched bottom for a time and that prices will rise as soon as consumers show more buying interest, and the average owner of rag stock is holding off awaiting developments. Probably the most actively sought grade of material this week has been roofing rags, and felt mills have bought merely in quantities ranging from a single carload up to five cars, and have apparently secured all the supply wanted at around a cent per pound at shipping points for No. 1 packing of roofing rags. Old whites are quotably firm at about 7 cents for No. 1 miscellaneous packing and between 8 and 9 cents for repacked whites of No. 1 quality. New white shirt cuttings, on the other hand, are lower, with offerings noted at 17 cents per pound at shipping points. New cuttings in general appear to be slipping in price despite the efforts of numerous dealers to hold the market up.

PAPER STOCK.—A quieter situation has prevailed in waste paper this week than during the first several weeks of the new year. Box board mills in the districts adjacent to New York, which for a time were fairly active buyers of low grades of stock, have mostly discontinued buying, and the movement of supplies therefore has slowed up somewhat. No broad fluctuations in prices have occurred. No. 1 mixed papers are selling at around 50 cents per hundred pounds f.o.b. New York, flat folded newspapers at 65 cents a hundred, white blank news cuttings at 2.75 cents a pound, No. 1 heavy book stock at 1.50 cents, old No. 1 kraft paper at 2.25 cents and ledgers and writings at 2.75 cents. A little better demand has prevailed for shavings and No. 1 hard white shavings bought 4.75 cents at New York and soft white of No. 1 quality 3.75 cents.

OLD ROPE AND BAGGING.—Old rope and bagging are little wanted by paper mills and prices display an easy trend. No. 1 domestic manila rope is freely offered by dealers at around 4 cents per pound at shipping points and No. 1 scrap bagging at 1.75 cents, and purchases could doubtless be effected at lower prices.

AMERICAN PAPERMAKERS PLANNING CONVENTION.

One of the biggest conventions ever held in the history of the paper industry is scheduled for April, according to a preliminary program just issued by Dr. Hugh P. Baker, Secretary-Treasurer of the American Paper and Pulp Association, particularly in the number of assications which will hold their convention at this time.

The plans for the meetings of the parent organization are particularly elaborate, and involve some notable speakers on general economic subjects, if present negotiations are successful.

The tentative program follows:

Monday, April 11—

Toilet Paper Converters Association....	10.00 A.M.
Tissue Paper Manufacturers Association	2.00 P.M.
Paper Makers Advertising Club........	1.00 P.M.

Tuesday, April 12—

Book Paper Manufacturers Association..	10.00 A.M.
Cover Paper Manufacturers Association..	2.30 P.M.
Pulp Manufacturers Association..	2.30 P.M.
Salesmen's Association of the Paper Industry	10.00 A.M.

Wednesday, April 13—

Writing Paper Manufacturers Association	10.00 A.M.
Sulphite Bond Division	2.30 P.M.
Cardboard Manufacturers Association ..	10.00 A.M.
Wrapping Paper Manufacturers Association	10.30 A.M.

Thursday, April 14—

American Paper and Pulp Association ..	10.00 A.M.
Binders Board Association	4.00 P.M.

All of the sessions will be held at the Waldorf-Astoria.

The program of the Technical Association of the Pulp and Paper Industry is set forth in another article.

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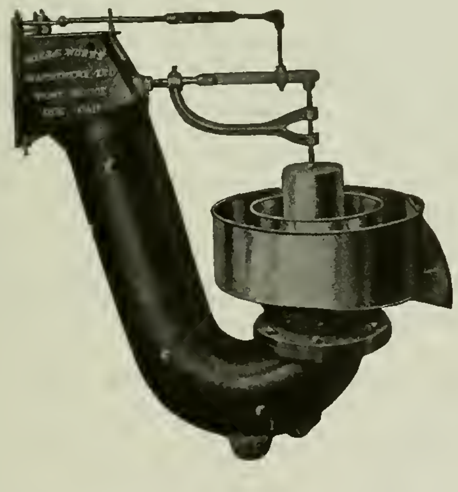
News From Our Advertisers

THE HARDY STOCK REGULATOR.

A number of stock regulators for paper machines have been invented or developed during the last few years. The one here described was devised and tried out in a Canadian mill and is manufactured by a Canadian firm.

The top of the regulator is a square box made to be bolted to one side of the stuff box. A notch is cut on this side of the box, the size of the entrance of the regulator so that the paste, rising to the proper level, enters the regulator. Continuing, the square box turns into a round pipe which takes a slope direction to the floor to then describe a curve and finish by a flange when the stuff can rise vertically. A tank is bolted to the flange of the pipe, said tank starting immediately to open as a funnel until the diameter is a little greater than that of the pipe ,and then it finishes as a kettle. When the paste flows through the regulator it falls from the box in the pipe, emerges in the tank and raises until it overflows in an outer tank which has an exit.

The mechanism is very simple; a float, levers and one gate. The float of cylindric form has a sharp point down. It is held tight in the centre of the inner tank, but is allowed an up and down motion; it works the levers and closes or opens the gates in the square box at the top. Placed right in the centre of the tank, it is a kind of obstruction to the free-flowing of the paste when emerging from the pipe to enter the inner tank and rise. The paste strikes the point of the float and slides along and all around to make its way until it spreads overboard. It is easily understood that thick stuff being more dense and having a greater consistency than the thin paste, works its way out harder, pushes up the float, which balances the levers so that they close the gate in the head and retain the flow. On the contrary, say, in thin stuff, the float which tested to a certain weight to be heavier than the thin paste, sinks down, draws back the levers, thus opening the gates which release the flow.



Since the action of the float must be absolutely free and extended to any degree of consistency of the stock, the gate must be delicately controlled. We have seen that the gate closes and restrains the flow when the float rises in thick stock, thit it opens and releases the stock if the float sinks down in thin stuff but there must be an opening and closing to allow a constant percentage of "solids" to be ejected at all times in any grade of consistency. This adjustment is made on the levers which convey the motion of the float to the gate.

Levers are disposed horizontally. The lower lever is in balance on the arm bracket, one end of which is attacher to the rod of the float, the other end bears a connecting link attached to the upper lever and this ling is moveable on both levers by means of a screw. It is the position given to the connecting link on the levers that determines the play of the gate in relation with that of the float. When the link is pushed back in the direction of the float, near the center of the lower lever, the action of the float on the gate is reduced to the minimum. On the contrary, if the link carried to the extremity of the lower lever it increases the action of the gate. To locate the right place where this connection of levers must be made to insure a constant percentage of fibre in any grade of density, is the very important point in the Hardy Regulator. Once determined, and this is usually made at the installation, the screws that move the connection on both levers may be locked so that it remains always in correct position.

The upper lever at the opposite end of its connection with the lower lever, is attached to the head of the regulator and pivots on this end; the hinges of the gate are on the same axis but with an inclined position and independent on the axis as to its motion. However, as the motion of the float acts on levers and the levers on the gate, this latter is connected by a rod which is threaded in the upper lever so that an adjustment of the gate without changing the position of the float and levers the rod can be made only by the turning to right or left to give more opening or reduce it. This rod for the control of the gate is placed for correction of tonnage or gauge when necessary, but the Hardy Regulator being built as an automatic outfit to make an uniform sheet, it requires not to be touched or manipulated when properly settled.

Although a novelty on the market, the inventor has demonstrated this regulator for more than two years and it is after many improvements made to meet with all the requirements of the regulation, that it has been launched on the market for the benefit of the paper industry. Some of these regulators have been running with the greatest of success for nearly two years. Within this space of time the regulator has been the object of the inventor's observations and of the paper mill owners who use it, and it has proved that besides the perfect regulation of the sheet of paper or felt, better drying follows as a logical result of the use of Hardy Regulator. Of course, the steam regulation is now rendered very easy. The uniformity of thickness of the sheet on the dryers requires a regular pressure of the steam and there is uniformity of the drying, thus greatly improving the quality of the stock.

It has also been observed that a paper machine fed by this regulator develops a greater capacity of production which is a logical consequence of both regularity of the sheet and the drying. All these conclusions are worthy of the best attention of paper mill owners, for the Hardy Regulator is a saver of labor, a greater producer, a maker of quality, a breaker of records and annuller of claims.

Announcement has been made of the appointment of Mr. G. F. Morris to the position of Sales Manager of the TIME RECORDER DIVISION of the International Business Machines Company, Limited, Toronto. Mr. Morris' connection with the Company has extended over a period of ten years, and he has been an active member of the organization in almost every capacity, beginning as an apprentice machinist when the International Time Recorders were first manufactured in Canada. The sale of International Time Recording devices has been increased rapidly within the last five years principally because of the general recognition of the necessity for the employment by business executives of accurate Time and Job Cost Records.

THE MANAGEMENT ENGINEERING AND DEVELOPMENT COMPANY.

We are glad to introduce as a new advertiser in the Pulp and Paper Magazine this week (see page 24) a firm already well-known to the industry through their work. The Management Engineering and Development Co. of Dayton, Ohio, is no longer simply the engineering department of a great paper making concern but is now doing a big work in the design, construction and development of pulp and paper manufacturing enterprises.

MR. HOWARD S. TAYLOR.

Mr. H. S. Taylor, chief engineer, needs no introduction to our readers. An article by him on Gypsum Roofs appeared in the Magazine for July 8, 1920 and in an early issue there will be as good an article on Ventilation of Machine Rooms. Mr. Taylor was with Geo. F. Hardy and lately chief engineer for the Spanish River Pulp & Paper Mills, Ltd.

MacRAE'S BLUE BOOK.

The Pulp and Paper Magazine has already found several occasions to make good use of the excellent index to American manufacturers issued by MacRae's Blue Book Co., Railway Exchange, Chicago. Ten dollars is a small fee for the service rendered by these pages.

The indexing of material and equipment in MacRea's Blue Book is done by The Noun, with but few exceptions. For example:

Water Coolers are indexed Coolers, Water; Fire Hydrants as Hydrants, Fire, etc. This saves endless confusion and duplication and makes it possible to insert in the book all needful classifications and still retain its convenient size.

The Address Section gives an alphabetical list of all the principal manufacturers of iron and steel products, building materials, etc., in the United States, and also shows the location of their branch offices and representatives.

The Classified Material Section, wherein are listed, under 20,000 classifications, the names of the various manufacturers of iron and steel products, building construction materials, railway supplies, etc., is arranged so you can get the information you desire very easily, and in thousands of cases it contains a message from the manufacturer.

The blank lines beneath every classification in the Classified Material Section are used by many buyers as an index to their requisitions, it being necessary only to insert on these lines the date and number of a requisition, or order, to have an index of purchases made throughout the year.

The Trade Name Index gives the names of the manufacturers of many thousands of trade-named articles. In the index cabinet at the company's Chicago office, are indexed 200,000 additional registered and non-registered trade names, and, should MacRae's Blue Book fail to disclose a trade name desired, an inquiry will have prompt attention, gratis.

The Miscellaneous Data Section will save much time and worry. It is comprised of odds and ends of information taken from a thousand sources and all indexed in such shape as to make the information readily accessible.

The section giving the Standard List Prices of building materials, iron and steel products, etc., is at once complete and unique, being the only collection of these list prices published. The Net Discount Computer is a handy supplement to this section.

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Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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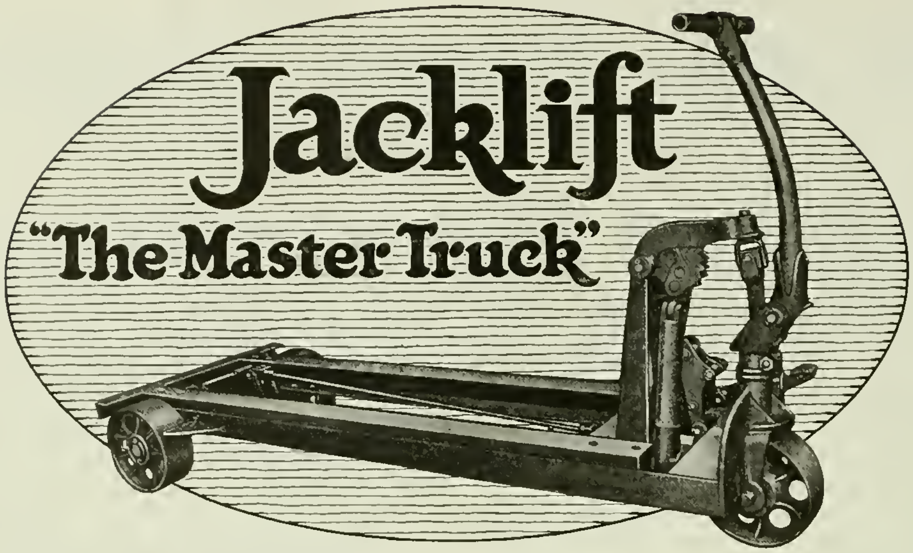

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EDITORIAL

PAPER PRICES.

The prices of most commodities have been downward during the past few months. This tendency has not very generally included papers until quite recently. Winter is always a bad time for extensive building less demand for paper boxes and wrapping papers. Winter is always a bad time for textensive building and the combination of weather and general depression has had its effect on builder's paper and boards. Without the usual amount of business, writing papers have become affected and many concerns have reduced advertising to such an extent that papers used in printing magazines are available in larger quantities and prices are reduced somewhat in consequence. The falling off in advertising demand is also reflected in the newsprint industry, where the high spot market has disappeared and in its place we find a healthy situation where consumers are contracting for their needs and keeping within their contracts.

It is very gratifying that the pulp and paper industry has been so well engaged that the necessity of decreasing prices and curtailing production has been so long deferred. Everyone knew that no single industry could withstand permanently the downward pressure due to general deflation. This has come about in the paper industry in a remarkably easy manner and so far without any serious hardship on those employed in the mills. Most concerns had not been able to give their plants a complete overhauling for some time, and some of them are making extensions, so the employees are kept fairly busy.

Some other industries reduced prices to stimulate buying and some of them found the result very disappointing because the public got the idea that the first reduction meant a series of drops and held off even more than before in making purchases. The paper men realized that there was just about so much business to go around and cutting prices might simply be cutting their own or one another's throats. There has gradually developed, however, a situation that is partly psychological. The lack of orders for paper has reflected on the pulp mills and even back to the wood market — raw materials in general are slightly less expensive; in fact, it seems that most items except transportation and labor have decreased enough to affect the situation. It is thus possible now for paper mills to reduce prices in harmony with other factors.

Buying has been resumed on a hopeful scale in a number of lines, which indicates that the public is at last convinced that the prices which have been reduced are on rock bottom. It seems likely that a fairly stable price condition has come about and that business is again in equilibrium. Occasional concessions may always be expected from people with an excess of goods, but from what we can gather, there are not many such individuals in the pulp and paper industry. Stocks in most lines did not get a chance to accumulate during the past few years so that a resumption of activity should find most mills ready to make orders profitably on the new basis.

COUNTING THE TREES.

One of the most hopeful signs with regard to the forestry situation is that everybody is talking about it. It is necessary to relieve a certain amount of gas in the digestion of wood and the same may be true in the discussing of the subject of conservation of our forests. Not only are newspapers and magazines aroused to a knowledge of the fact that they are dependent for their lives on a continuously productive forest, but other wood using industries are also realizing their present precarious position with regard to future supplies of their raw material. The trouble has been that the lumber industry took no heed of the matter, and in a sense, did not need to, because it was easy to dismantle a saw mill, move it to a new location and butcher another batch of timber — perhaps even burning what was not cut. It was comparatively easy, too, to locate another place to set up the mill. But now there are thousands of mills threatened with extinction because there are no more unsold timber areas to be had. Operators "guessed" they could get along. They "thought" there was timber enough and they could waste as they wished. The idea of a permanent location with a perpetual wood supply was as strange to them as the idea of barn-yard and garden would be to a Bedouin.

And the pulp makers were like unto them. These concerns succeeded several times in getting new leases to cut after others had been stripped. They were able to purchase a lot of wood from farmers. The supply seemed inexhaustible. But the paths of those who were mining the forest converged and when one began to hear the sound of the others axes it became painfully evident that there could not be as much timber as each had thought. So the lumberman, the wagon maker, the furniture manufacturer, the shipbuilder, the railroad and the pulp and paper maker began to inquire where his wood would come from in the next 5, 10 or 50 years. A hasty and incomplete survey of the situation revealed a most alarming condition. Areas that were supposed to be virgin forest were often found completely destroyed by fire or largely devastated by insect pests. No one knew the actual amount of available timber or the extent of the damage.

An attempt to get accurate and up-to-date figures is underway in a finely organized effort in New Brunswick and beginnings have been made elsewhere in Canada. The United States Congress is at present the scene of an attempt to bring into being a proper Federal Forest Policy as would be provided by the Snell bill. An accurate inventory of the country's forest resources and their conditions is one of the main objects of the bill. The words of R. S. Kellogg secretary of the Newsprint Service Bureau and for years connected with the lumber industry, should be read with great interest. He said, in supporting this feature of the Snell bill: "forest inventory and a census of timber requirements are fundamental to any adequate plan for forest production and utilization. We must find out what we have, where it is, how fast it is growing, how rapidly it is being use, and what we might have if all forest soil were put to work. We don't know where we stand now. We must know if we are to tackle the problem of continuous forest production on an adequate scale and in an intelligent fashion."

An adequate inventory is just as essential in Canada as in the United States; more so, because our industrial success and economic independence are more closely based on the forest as a source of raw material. The security of the $300,000,000 invested in the pulp and paper industry in Canada and the employment of nearly 30,000 persons largely depends on the assurance of a permanent wood supply. A paper mill cannot be loaded on a flat car like a saw mill and set up tomorrow where wood is more plentiful. Nor can wood be brought from increasingly greater—and more and more prohibitive distances. At present we do not know where we stand. We have a bank account, but no bank book. We have been spending our substance riotously and have never drawn up a balance. Rough estimates of growth and consumption show conclusively that we are in a precarious position. A man's expectation of life at fifty depends very largely on his physical condition at that age. We must know the condition and extent of our forests if we are to know how long they will last. A medical examination ten years ago will not get us a new insurance policy today. A timber cruise of ten years ago is an even poorer indication of the forest's condition today. The man is at least alive, the forest may have been practically destroyed.

The perfection of the airplane has vastly simplified the problem. Burned and dead areas can be immediately located and written off and other stands fairly well analyzed. The main thing is to get started. A prompt beginning on a well organized plan is essential. Let the provinces spend some of their forest revenue thus for the benefit of the forest.

IMPROVING THE ACCIDENT RECORD.

A large pulp and paper mill in Quebec records that for about 2,800,000 total man-hours worked in the year, there were 113 accidents in 1919 and 158 in 1920; but while the former cost 1857 days lost time, the latter caused the loss of only 1676. In other words, the frequency rate increased from 40.45 to 55.81, while the severity rate decreased from 0.67 to 0.59. A fatal accident occurred in each year and is not included in the figures. The result otherwise is very encouraging. The experience of this mill is fairly typical of what is going on throughout the Dominion and shows that while much has been accomplished by organized accident prevention work, there is yet much to be done. We have felt for some time that this kind of work might well be made a department of the Pulp and Paper Association, which would make it most effective.

COBWEBS.

The Spanish River Mills at Sault Ste. Marie, instead of a general shut down for repairs and consequent layoff of help for a week or two, as is often the custom, have been stopping operations one day a week to do this necessary work. The mills could run continuously as far as orders go, but the management is wise enough to apply the principle of Safety First to the health of the mill. It is necessary with machinery as with men, to keep in good condition—repair belts before they break, replace bearings before they burn out or get far out of alignment, fix leaky valves while the loss is small, etc.

In this issue is an advertisement of the Ontario Government for tenders for two pulp and timber limits. The basis of payment is 80 cents a cord for spruce and 40 cents for other pulpwood. How much more will come in as a bonus is what the tender is to find out. Perhaps this is the best way of disposing of timber, but the advantage seems to be principally with the bidder.

Two more pulp mills are promised for British Columbia. They are sprouting at the rate of about one a month.

That fine paper of Howard Taylor's on Ventilation of Machine Rooms unfortunately has to be postponed till next week.

The British Technical Section has 187 members Good work!

The Annual Banquet of the Canadian Pulp and Paper Assiociation

This important and enjoyable event took place in the Ritz Carlton Hotel, Montreal, Friday evening, Jan. 21. It was the largest banquet in the history of the Canadian Pulp and Paper Association and was a fitting climax to a memorable year. Several days of strenuous business meetings were over and everybody was ready for a good time. If anyone at the banquet failed to enjoy himself it certainly was not the fault of the manager Quick of the hotel or Secretary Dawe of the Association.

There were only two speeches on the program, which, with the brief inaugurated address of the new president, Mr. P. B. Wilson, started the evening very auspiciously. Following the serious introduction, a varied and excellent program kept the guests entertained till it was tomorrow.

Address of President Wilson.

When the toast to the King had been proposed and drunk, President P. B. Wilson of the Canadian Pulp and Paper Association addressed the gathering as follows:—

Gentlemen: I appreciate more than I can say the honor you have bestowed upon me in electing me President of this Association. At the same time I feel lacking in those qualities for which my predecessor is so well known, including his wonderful ability to crystallize his valuable thoughts on all matters into sentences which appeal. As an example of this I should state that when Mr. Chahoon wrote to me asking that I allow my name to come forward for the Presidency, in giving me some advice as to the conduct of this meeting he said that in his opinion what we needed at such a meeting was "wit, not work". I am going, therefore, to take credit to myself for being the next best to the originator of a good sentence, by being the first quoter of it.

I realize, of course, that at the annual banquet held in Montreal, if anything serious is to be said it must be said very early in the evening, and as I have been described on the screen as being your new "pilot", I want to say that in that capacity I shall certainly steer you straight, although in looking round this room I realize that I might have some difficulty in steering you very straight this evening.

The Association has passed through a year of unexampled prosperity. The men have made more money, the producers have made more money, and even the consumers of our products have made more money. We have, in fact, taken the tide of prosperity at the flood, and, as we all know, we have to take the current when it serves or lose our ventures. I wish it to be understood that my connection with a company which deals solely in newsprint will not, I hope, cause me to lose sight of the other very important interests served by this Association, and I mean to give a large part of my time to the consideration of the problems facing the producers of sulphite, groundwood, board, bag, book and writing, wrapping and all other papers, the total output of which is, of course, very large. The importance of the industries covered by the Association may be expressed as involving the production of commodities during the calendar year 1920 amounting in value to more than $200,000,000. Our exports alone for the year reached a total of $163,127,982, of which at least $125,000,000 represents exports sent to the United States. In this connection the industry has been of incalculable value to the exchange situation, and I hope Sir Henry Drayton, on my right, will take note of that fact.

The work of the Association during the past year, when it had the great advantage of being under the direct management of Mr. Chahoon, has been very important. One of its most important undertakings was in connection with the Central Institute of Industrial Research, which is being instituted at Ottawa under Act of Parliament. In this connection, a committee with Col. C. H. L. Jones at its head has been formed to take the greatest possible advantage of the facilities offered by such an Institute when it is established. The fact that the Institute at Ottawa is quite in embryo at the present time will not necessarily postpone or prevent the activities of this committee, because it is intended to make use of the equipment already existing at the mills which are members of this Association, and we should all feel it important that the mills should throw open to this committee any processes they have or any research work being done in order that all the mills may take advantage of the research work of any one mill. As someone said at the Technical Section meeting, a mill that closes its doors with the idea of keeping secret its own work, shuts out far more than it shuts in, and I hope we shall all remember this when the occasion arises for us to be asked to further industrial research by admitting the proper persons to make investigation of our processes.

The Institute of Industrial Research is of importance also from the fact that it tends to foster technical education of Canadians. We have in our mills a large number of American and other outside operatives and they do most excellent work, but we ought to be raising Canadians equipped technically to carry out such work.

Another matter which has been much discussed during the year is that of scientific forestry in the different provinces, and it is most desirable that it should be continued both from an industrial and a national point of view. The Governments of Quebec and Ontario in particular have shown a keen sympathy and desire to promote the welfare of the industry and also of the public along these lines. But no Government can move faster than public opinion will sanction, and therefore a great task lies before the Association in organizing, educating and enlightening the people as to the value of their heritage and the means which should be taken to conserve and renew it. Governments, in short, "are" the people.

Nor must it be lost sight of that the industry contributes very largely to the revenues of the respective provinces. The Quebec Government last year derived from its forest resources, principally from its pulpwood limits, over $2,600,000, or about 15 per cent of its total revenues. This, no doubt, accounts for the fact that the Provincial Treasurer, on my left, the Hon. Walter Mitchell, is the only provincial treasurer able to show a surplus in his finances. This year, of course, the amount will be much greater because of increased license fees and stumpage dues. Ontario during the last five years has drawn an average of $1,850,000 annually from forest reserves, or about one-ninth of its total revenue. I suggest for the consideration of these and other provinces that it would be good business to put back at least 50 per cent of the revenue so obtained into the conservation and reforestation of their timber limits, thereby insuring to themselves a steady and permanent revenue.

There is one feature of our situation which I should like to impress upon you, and that is the need, greater than even before, for co-operation, confidence, and mutual assistance among the members of the industry. The perplexing character of the problems now before us are not less acute than those which we have been called upon to solve during the past few years of our existence. Of course, during War time we had to solve difficult problems. But now we are going through a readjustment. Deflation and its effect upon trade in general is upon us. Nevertheless, I believe that the present trade depression is merely the logical aftermath of the long period of inflation, and that it has now reached its lowest point, or, if not, that it will not last much longer and it is fair, I think, to assume that it will be followed by a long period of really stabilized conditions such as existed before the war, except that as we now understand the problems and principles of our trade we should be able to get better results.

The present time is one, first, for cool judgment and, secondly, for a deliberate and continuous policy following such judgment. The industry is to be congratulated upon the manner in which it has so far met the transitory conditions through which we are passing, and its members will be well advised to proceed further along the course they have mapped out for themselves, that is, a course of steadiness and straightness, and should avoid being stampeded into unwise or precipitate actions.

I have no fear as to the future because I know that the relations between the manufacturers and those we serve are immensely better than they were. What we need is absolute sincerity of purpose, integrity in our dealings with each other, and with our customers. Surely we are too old at this time to have to consider the point as to whether it is good business to lay all our cards on the table. I say we have no time, and there is no need to examine into the "bona fides" of the people with whom we are doing satisfactory business, and I believe that Canadian business has vastly improved in the last few years in this respect. Co-operation may require self-sacrifice and self-abnegation, for the good of all; but so long as we have confidence in each other we shall, I am assured, go forward from success to success. But we must be deliberate in our judgments; we must make no hasty decisions; and if we do this and follow out the good old Anglo-Saxon rules of steadiness in business we shall lay the foundation for years of steady prosperity. Canadians are not given to hasty actions. They deliberate upon the points in question and then move quickly to give them effect.

The outlook is excellent, but we must remember that Oliver Cromwell, while trusting in God, kept his powder dry.

Do not let us forget in these times Mr. Montgomery's sermon delivered at this function last year and the moral he drew respecting the conduct of Rheoboham. At the same time we must conserve our resources and impress it upon those with whom we come in contact to do the same.

Gentlemen, I thank you for the very close hearing you have given me, and I express the hope that I shall not be too disappointing during the ensuing year in the conduct of the affairs of this great and successful Association.

At the close of his address, the President introduced the Hon. Sir Henry Drayton, K.C., K.B., M.P., Minister of Finance of the Dominion of Canada.

Sir Henry Drayton's Speech.

In opening his remarks, Sir Henry Drayton first paid a touching tribute to his late friend and colleague, the Hon. Arthur L. Sifton, Secretary of State, whose death had just been announced. He continued:

"Mr. Chairman and gentlemen: Well, aren't we having a good time here to-night? Aren't we enjoying this splendidly? I believe you are going to enjoy this despite anything any speaker can try to say to you.

I will admit that it is more or less of a nuisance to have to listen to speeches — and particularly some speeches. I put mine in among the list, and I want to tell you that it is on your own heads, and if I can stand it, you have got to.

Now, gentlemen, two accidents have happened tonight. They were not such bad accidents after all. You see, the Chairman told me I was to be met. I do not know exactly what was to be done with me, but I was not met because my train got in too soon. By the by, I was travelling via the Canadian National.

But another accident happened to-night. My friend, the Honorable Mr. Mitchell, was also to be met. Unfortunately, his train was late. He came from Quebec, and he was not on the Canadian National. All of this goes to show that accidents will happen, no matter how well we try to look after them.

Now there is another thing that I should tell you at the commencement. I have been told by the Chairman that I am supposed to make a sensible speech — a sensible, solid business talk. Well, that is an awful job, isn't it? This is a tremendous task to be given to me, but you are not to feel downhearted, because while I am to try to talk seriously to you, my friend, Mr. Mitchell, is going to show you how witty some people can be.

But, gentlemen, at the commencement, I really want to talk to you very seriously indeed, because, on this, the first occasion that I have of speaking to my fellow citizens, my first duty is to acknowledge a deep sense of loss which I, in company with colleagues, feel in the death of my late colleague, the Right Honorable Arthur Sifton.

I do not know if any of you, gentlemen, knew Mr. Sifton. He was a man always; he was, for many years, devoted to public service. He achieved fame and distinction as a jurist. He was a most successful Provincial Premier, and at the call of duty came to Ottawa. Tht Ottawa life is a hard life. The labors are difficult and severe, and the strain intense. Mr. Sifton was not a man of robust health or strength, and I want to say that no man was more faithful to his trust; no man attended to his duties better; no man gave closer attention and better work to Canadian business than did Mr. Sifton, my late, much-lamented colleague, who, if ever a man died in harness, died in harness.

Now, gentlemen, of course the next thing I ought to do is to congratulate you; not only ought I to do it, but I do it, and I do it very willingly, because you are indeed to be congratulated. You have made a magnificent showing; your industry is one which has done much for Canada, but I believe will do more and continue to grow and to expand and do much more for Canada than it has yet done, and more for the Canadian people.

But you have already done great things. When we recollect that in eighteen hundred and eighty-one, there were but some fifteen hundred employees in some forty-one mills — small paper mills — in the whole country; when we remember that in eighteen hundred and eighty-one, the total wage bill of all those mills was but four hundred and sixty thousand dollars, and when we realize that for the year nineteen hundred and nineteen, in ninety-nine large mills, there were no less than twenty-six thousand, seven hundred and sixty-five men working, and that the wage bill distributed amongst our people, from your activities, amounted to the sum of thirty-two million, three hundred and twenty-five thousand dollars, you will realize that you have indeed done great things. You have done great things for yourselves, and you have done great things for the workers. That is no small advance; that is no small addition to the number of men working in this particular industry, and the sum of thirty-two million of dollars is a very large contribution to the support of our industrial population.

It is well for the workers; it is well again for the farmers. Of all the industries, yours, I think, is one which would commend itself even to our farmer friends. And why? Because you have turned what used to be a nuisance and a waste, actually something which had to be got rid of by hard, unremunerative work — you have turned it into an asset. The pulpwood of yesterday, which was worthless, to-day is the foundation for many a prosperous farm, on which the pioneer farmer, in both the bush lands of Ontario and Quebec, tills his farm, until it becomes clear and productive, and habitable for himself and his family. It is waste material which is being changed from waste, by reason of your operations, into material worth sixteen dollars a cord. So you have also done well for the farmer. And besides doing well for yourselves and the workers and the farmers, you have also done well for the country.

We constantly hear much of the great wealth of our undeveloped natural resources. They are great. In them the hope of the country is firmly based and rightly so. Their development will, and can, not only profitably support our population but also the hosts that will be attracted to our shores by the millions of acres of virgin soil and other undeveloped resources awaiting them, as well as by the strength and fairness of our laws, the justice with which they are enforced, and the solidarity, saneness, and reasonableness of the Canadian people.

These resources, undeveloped, merely represent potential rather than immediate wealth. They represent a storehouse, a granary which can only be made available by enterprise, vision and work, by great investment of capital and its intelligent use.

Great as is the value of our prairie lands, they nevertheless support nobody and bring no revenue to the State until they are farmed. In like manner, the country's great resources of pulpwood gave no support to labor and returned nothing to the country until the Canadian Pulp and Paper Industry sprang into being. And so it is a great thing for the country, because to-day that dormant resource is one yielding not only great returns to labor, but, as your President, Mr. Wilson, has pointed out, great returns to the Government, both Provincial and Dominion.

A great thing for the country? Yes. A great thing for the country, because it is time to increase exportations. To-day we are at least doing nothing to our exportations of newsprint. On the other hand, in the market where our dollar is at a discount, and in the market where it is so much in the national interest to do everything we can to right that unfortunate exchange, your shipments last year amounted to forty-six millions of dollars, and I may tell you that your shipments of forty-six millions of dollars into the United States markets, represented no less than ten per cent of our goods exported to the United States.

A great thing for the country: Yes. Because you are still going on, for in the last nine months, as against forty-six millions exported last year, this year you have exported no less than forty-nine millions, six hundred thousand dollars, and that exports to eleven and two-tenths per cent. of this country's total sales to the United States markets. I hope, gentlemen, that your surpluses are still going to grow, and that you are going to export still greater quantities of newsprint—of course, after making a just and ample provision for the home market.

Now, I know, gentlemen, that is something you want to do. Yes, we have had troubles about it in the past. I think perhaps I inherited some of them. I will do my best to put up with them, but we did have troubles, and they were serious troubles. There was much conflict; there was much debate; there was much room for doubt. But after all the hurley-burley and dust have died down, I believe it to be the feeling of you gentlemen, the conviction of this Association, that the home market is the market which ought to be looked after at least upon terms as favorable as those given to the foreign markets. But, gentlemen, you have done so awfully well with newsprint, and I wonder why you cannot do just as well with other papers.

You say "We do"? How much do you export of other papers? Instead of exporting other papers, we have not yet got control of our own markets. Some ten millions of dollars of other papers, cardboards, and other boards, wrapping papers, writing papers, book papers, and the like — some ten millions of dollars were imported into Canada last year, and out of that ten millions of dollars, some nine million, three hundred thousand dollars were imported from the United States, still further depressing our dollar in that market.

Well, gentlemen, I think you will agree with me that if there is any one industry that can be described as fairly indigeneous to Canada, it ought to be the paper making industry. With our unrivalled resources, our wonderful water powers, I wonder if we cannot make our own wrapping paper, because you imported a lot of wrapping paper last year. I believe, gentlemen, that you can capture that market, that you will capture that market, and I will go further than that and say you will not only capture that market, but that you will add to these other papers, and get something like the same export business in the other papers that you now have in the newsprint, to your own great benefit, and the benefit of our country.

I do not think I have done more than to give a just tribute to what has been done. I have referred to the benefits to the workers, the benefits to the farmers, the benefit to the other Canadian industries, because your industry itself does not take a great deal of other Canadian products. One of the finest things about the situation to-day is that Canadian industry and Canadian foundries can now apparently turn out Canadian products for the use of the Canadian people. I do not know why that should not be so. The first big machine for making newsprint ever made in Canada has just been completed. I hope all your machines will also soon be made in Canada.

You have done it all, and, gentlemen, I think you will all agree with me that while you have done it well, the country is in this position: that while you have reason to expect very fair and reasonable treatment from it, after all, these operations have not been unaccompanied by a generous measure of reward and success to yourselves. You have been successful, and you know that success such as your industry has returned brings with it corresponding duties and obligations, and as your success has been great, and as you have done much, so are your duties and obligations correspondingly heavy — duties and obligations which you are looking after to-day in the practical operations of your mills.

Twenty-six thousand seven hundred and sixty-five of your fellow Canadians you are looking after, and besides looking after that number, you have been looking after a far greater number, because those figures do not include your woods operations. Those figures do not include the work of getting your raw materials out of the bush. You know, gentlemen, I have no doubt, that you are looking after them. but I wonder — I wonder — if you all really visualize and understand what the real, underlying difficulty is, the trouble and worry in the minds of labor, and that is the constant dread of unemployment — the fear of the laborer of losing his job. I wonder if you really realize how deep a fear that is, and how sorely the laborer is affected by it. It is a very happy community in which each man is his own landlord. That is a first-rate place to get to, and I understand and I believe that a large number of your employees do own their own homes. You know that home. I have seen it in the west, particularly in connection with mining towns and with mill towns. I have seen it particularly with regard to the recent trip I made in connection with the Tariff Inquiry. Those homes represent often — very often — not only the savings of a few years, but the savings of a life-time. Everything that the owner has in the world, his whole estate — and in many of these small communities, villages and small towns have indeed sprung into being only by reason of the installation of some large industry. Let the industry shut down, let the wheels cease moving, and that home is useless, and employees must seek work elsewhere, and gentlemen, I hope you are going to continue to extend, and I hope you will keep your mills running and that they will run forever, and I hope that your activities will increase rather than decrease.

Big industry! I believe, gentlemen, that you are one of the big industries to be found in the country. You know we have heard a great deal about 'big business'', have we not? And an awful lot of the slurs which accompany 'big business' Well, gentlemen, do you think there is anything very wrong, anything very immoral in mere size? I don't. Do you think there is anything very wrong in doing a good thing twice as often? I don't. Or in doing a good thing perhaps a thousand times as often? I don't. If it be a good thing for a company to start a small industry in a community, it would be a good thing for them perhaps to build a factory employing a hundred men, and it ought to be a better thing when that factory is enlarged and modernized to employ a thousand men. One is 'big business' and the other is not.

I wonder if you gentlemen interested in one of the 'big businesses' of this country are not in a position to show that the bigger you have become, the better you have represented your trust; that the bigger you have been, and the stronger you have been, the better, you have looked after your factories and your mills and your men.

Well, talking about big, successful men of business. Do you not think there is another principal duty which is resting on you to-day? Do you not think that that duty takes you in the direction of doing something apart from your own business, but as merely Canadian citizens, something directly for Canada? You know, gentlemen, there is walking up and down the streets now, what well might be called a pessimist. You might call him an idealist of new and untried and fantastical notions. You might call him something worse, but there is a feeling of depression and a feeling of unrest. I wonder why. I wonder if it is because those who really know — the strong men of business, the successful men of business in the country—ought not to be doing perhaps a little bit more in the direction of public affairs. Can you tell why there is this talk of depression ? Here we are this year very largely in a position absolutely different from what we were last yead. Then the whole talk of trouble was high prices and wild extravagance; the nation was going to spend its money in such a way that it would pauperize itself. The cost of living index had gotten up to 263 over the 100 per cent of nineteen hundred and thirteen. That is what the figure was when the cost of living started downwards last year. Now it is all changed. It is all checked. Instead of extravagant buying, we have had buying which has been too light. There was not enough of it. The cost of living has come down. The last figure I recall is 214 as against 263, but the grumbling has increased rather than decreased. Why? Our export trade instead of dropping off as well might have been expected in view of the disorganized state of export markets has increased. Our domestic exports down to the end of December are $33,000,000 higher than they were for the same period of last year, notwithstanding the fact that prices have materially dropped. Our bank statements make an excellent showing for the financial institutions of our country. The real fact is that we are relatively in an excellent position, relatively better off than we have ever been before. With a proper confidence in Canada and ourselves, working in accord and forgetting all prejudices and selfishness that injures a common effort, let us make sure that the year 1921 will be a year of progress.

Of course, there is much to be done. Our large, unfavorable trade balance with our friends in the great republic to the South, with the resultant depreciation of our currency in their exchanges, is certainly not to be desired and ought as much as possible to be remedied. Our resultant war burdens mean heavy and continued expense. New or extended sources of public revenue must be found.

There is work for all of us. The tasks ahead of Canada will be discharged but by the work of all her people, certainly not by the efforts of any government, no matter how able it may be. Canada requires greater production. Just as soon as possible, to be running full time and with 100 per cent efficiency. This result will not be attained either through government interference or paternalism.

I have already referred to the duties arising out of your business, but your work is by no means finished. your obligation by no means discharged. Every Canadian ought to take a direct and intelligent interest in his country, much more so, every Canadian who has amply proved his brains and ability in the commercial field.

After all, the business of government is closely affiliated to ordinary business, as you understand it. It is not only big business, it is the biggest business. There is of course a difference between it and your business. For example, those actively engaged in it are paid but what you would call small salaries and in the place of dividends generally receive abuse and lots of it. But after all it is well worth it. No dividend, however large, can be so great as doing something, however little, to help Canada, to make this country a better and happier home for its citizens. And, gentlemen, the call for a sane and insistent interest in your country's affairs was never so great as now. And you gentlemen are particularly interested and personnally. Revenues must be maintained. The country's financial requirements are great. You must be taxed. You are much interested in seeing that no form of taxation is adopted which will unduly hamper and restrict production and business in any one of its many activities. You are also much interested in seeing that the cost of government is reduced to the last cent compatible with the proper discharge of public business and the requirements of public service. Canada asks you for a careful, unselfish consideration of her many problems. Will you deny her?

At the close of the address by the Minister of Finance, the feelings of every one were expressed by President Wilson, who said: We owe Sir Henry Drayton a vote of thanks for the most excellent speech he has delivered to us.

There are four things I want to assure Sir Henry of, on behalf of this Association. One is that we will do big business; we will keep the mills running; we will supply Canadian publishers at reasonable prices, and we will willingly bear our share of the taxes.

I thank you, Sir Henry.

I now have great pleasure in calling upon the Honourable Mr. Mitchell, the Provincial Treasurer of Quebec.

Address of Hon. Walter G. Mitchell, K.C., B.C.L.

I appreciate very highly the privilege of being here to-night and I sincerely hope that the relationship that has existed between the Government, which I have the honor to represent, and your Association, which has been so very agreeable to both of us, I believe, in the past, will continue.

Sir Henry Drayton, however, has made my task an exceedingly difficult one. He has made a very serious speech and announced to you that I was going to make a witty one. I do not know of any undertaking that any man could attempt that is more difficult than to try to make a witty speech, even if he is able to, after that remark.

Sir Henry Drayton says that he arrived by the Canadian National. It has changed its name so often that I have forgotten what name to call it by. My only explanation of the fact that Sir Henry arrived ahead of time on the Canadian National is that he must have left on yesterday's train.

Your Chairman, gentlemen, has just told you that your Association contributed fifteen per cent of the revenue of the Province of Quebec.

Insofar as we are concerned, gentlemen, we look upon you pulp manufacturers of the Province of Quebec and the Dominion of Canada as partners, for the purpose of developing the great pulp and paper industry in this Province. I know you want to contribute to the treasury of the Province of Quebec, and I am sure that you want to contribute in a very large sum. The only condition that I am sure you will put upon it is that we see that the money that is contributed by you, or any tax-payer in this country, is properly expended for the benefit of the people of this country.

The kind of partnership, Mr. Chairman, which I understand IS a partnership is one for the benefit of both the partners, and not the kind of partnership which I ran up against a good many years ago when I was practising law. One day a fellow by the name of Joe Leblanc came in to see me and told me that he had got into difficulties with another chap. They had bought a cow together, and Joe told me that the other fellow pretended that Joe owned the front end of the cow and the other fellow the back end. I did not know how to solve the problem. Joe claimed that he had to feed the cow and the other fellow was getting all the milk. I did not know how to solve the problem, and I told him to go out and try to settle it. (That is the way we lawyers do when we don't know how to advise our clients). I did not see Joe for sometime and one day I ran across him, and I said "Joe, what happened about the cow?" He said "I could not settle." I said "What did you do? How did you fix it up?" He said "I fixed it up all right. I killed my end and his end died."

What we want, gentlemen, is the kind of partnership where we both put into the feeding end, and we will both take out the profits; this kind of partnership that we want in this country from the Atlantic to the Pacific is co-operation between one and all.

I was a little surprised here tonight. I came here expecting to meet a lot of people from the great American Republic to the south of us, and I believe there are many here. We welcome them; we welcome them, and we also welcome those from the great Province of Ontario.

Gentlemen, now for just one minute of seriousness. I was in New York some little time ago with my friend, Mr. Chahoon. He and I travelled all over the city of New York trying to get a drink—for Mr. Chahoon. Finally we discovered a place where you could get a bottle for fifteen dollars. I did not know his Grand-

Mere tracks. He made me put it in my hip pocket, and we started back home. Unfortunately, I was hit by a street car as we were crossing Forty-second street, and as I sat up I felt something trickling down the back of my leg. I told my friend Chahoon about it, and he said "I hope its blood".

I do not intend to detain you long, but there is one point I would like to make, and that is that I agree with Sir Henry Drayton—sometimes. I think on this occasion I must agree with him when he says all we have got to do is to have a stout heart, and to be optimists from the word "Go".

We have come through four years of war, and if tonight, gentlemen, you who are apt to be pessimists will just go back to Nineteen hundred and fourteen, when war was declared, and think of the feelings that animated us at that time—why, gentlemen, we did not know what was to become of the British Empire and her allies; nor did we know what was to become of our country; whether it would be ruled by the iron rod of the German Kaiser—and then think of our feelings here tonight, when we have not a worry, and have nothing else to do but to put our hands and shoulders to the wheel, and march forward for the purpose of building up this country, and the great British Empire to which we belong.

There is a cure for this. With all due respect to you, Sir Henry, and to the Government to which you have the honour to belong, with all respect to the Government of the United States, with all respect to all the Governments who attempted to regulate and fix prices by legislation—I believe there is only one cure for the ills from which we are suffering, inflated currency, high prices, not enough production for the consumer, and that cure is economy in government, whether Federal, Provincial, or Municipal, and economy by corporations and economy by individuals. The second cure, gentlemen, is work, more work, and again hard work. The third cure is co-operation between all men for the future of our great country, and when I say "co-operation", Sir, I mean co-operation between the capitalist and the laborer; I mean co-operation between the manufacturer and the farmer; I mean co-operation between all nationalities and creeds. I believe in co-operation of all the people of this great country from the Atlantic to the Pacific and from the Forty-Ninth Parallel to the Arctic Ocean.

Do not forget, gentlemen, you who are employers, that the laborer has rights; do not forget, sirs, that the farmer is just as necessary to produce the food stuffs which your laborers consume as the capitalist is to labor, and the laborer is to the capitalist. Remember it is one great machine working together, and if one of the cogs goes wrong the whole machine stops.

I ask you as individuals—each one of you—to look at the other man's point of view at all times, and upon all occasions, and when I talk to them I will tell them to look at your point of view, and remember that capital is entitled to its profits. For, unless you give capital the profit to which it is entitled, it will go to some other country which will mean the closing down of our factories, and no more market for labor, and no more consumers for what the farmer produces.

So I say, gentlemen, let us economize from one end of the country to the other. Let us work night and day until we have replenished the world with what the world requires. Let us co-operate one with the other, for the better living conditions in this country, and for the up-building of this great Canada of ours, and when I say "co-operation", Sir, I want further co-operation than that, because here in the Province of Quebec we have had difficulties in the past, but I say to you, Sir, as one of the great leaders of the Province of Ontario, that, so far as the Province of Quebec is concerned, that bye-gones are bye-gones, and we are giving you our hand of fellowship and marching together as Canadians, proud of belonging to the British Empire.

Gentlemen, just one more message to all the people of Canada, and that is, let us respect the views of others. It matters little to my mind whether a man worships in a Roman Catholic Cathedral or a Protestant Chapel; surely we are all praying to the same God, but we need a unity of creeds, of nationalities, and need to have one standard, pure-blooded, four-square Canadianism.

Gentlemen, we had in the great war which ended in Nineteen hundred and eighteen, as allies, the great American Republic to the south of us. Gentlemen, when I speak of co-operation, I ask them to remember, and I ask all Canadians to remember, that if we go back a generation or two, we find the same ancestors, and today we are cousins upon this great American continent. I ask them for co-operation, and I say, let us work hand in hand, as we are working in this country for the up-building of this great continent of America, and Mr. Chairman, with your permission, I will read the sentiment that is in my heart toward the whole great American people, and that is applicable to the flags of the British Empire and the great American Republic:—

> "Twine them together in peace and war,
> Together on land and sea.
> From the Southern Cross to the Northern Star,
> From the purple east to the west afar,
> Wherever the hands that bear them are,
> Flags of a kindred free."

T. A. P. P. I. PUBLICATIONS.

The Technical Association of the Pulp and Paper Industry has issued another important contribution to the literature of pulp and paper manufacture. A copy has just been received by the Pulp and Paper Magazine.

Technical Association Papers, Series III, contains the papers and addresses presented at the Fall meeting of the Technical Association of the Pulp and Paper Industry at Saratoga Springs, N.Y., September 1 to 3, 1920. Besides the reports of standing committees and the discussions of papers, the volume contains transcripts of addresses delivered at the banquet tendered to the association by the manufacturers of the Hudson River Valley and a report on the measurement of pulpwood issued by the Newsprint Service Bureau. Among other subjects dealt with are Tests for Unbleached Sulphite and Soda Fibres, Use of Sulphur in Soda Pulp Cooking, Substitutes for Alum and Rosin, Automatic Cooking Control for Chemical Pulp, New Device for Cleaning Paper Felts, Automatic Mixing System for Paper Stock, and Fireproof Hood for Machines. The publication contains in addition a list of the officers and committees of the Technical Association of the Pulp and Paper Industry, the revised text of the constitution and by-laws and a directory of members of the association. Copies will be sent postage paid to any address on receipt of $2 by the secretary of the association, 542 Fifth Avenue, New York, N.Y.

An Industrial Research Department

SCIENTIFIC AND INDUSTRIAL RESEARCH IN CANADA.

Address of Dr. R. F. Ruttan before the Technical Section, C. P. & P. A.

In connection with the discussion of the report of the special committee, Dr. R. F. Ruttan, head of the Chemistry Department of McGill University, addressed the Technical Section as follows:

Mr. Chairman and gentlemen: I hope that the establishment of an active Research Institution will be of great benefit, not only to the paper industry, but to all the industries in Canada. We are all interested in exports, and it will be necessary for us to produce in this country the very best articles we can produce, to meet the competition from the outside.

In England, as many of you are aware, there is a system of guilds or associations for co-operative research. A small set of organizations are being contemplated — and some are actually in existence — in the United States. There are twenty-three different organizations in England. The manufacturers in each industry are grouped together; each with its own research laboratory; each research laboratory has men in charge who are receiving a far better salary than the Professors of the Universities. Each of these large laboratories is supported in part by the industry, and in part by the Government. The object is to enable the English industries and manufacturers by improving methods and products to hold their own in competition with the world.

Now, the paper industry in Canada is our great export industry. It is now in a prosperous condition. It is able to supply — as we already know — the funds for the establishment of a research laboratory to carry on scientific research, provided there is co-operation, not only as an industry, but individually. England has found that the closed door in industries shuts out more than it shuts in, and the individual manufacturers have united whole-heartedly in contributing all they can toward the advancement of the industry as a whole.

Co-operation among industries is more difficult to carry out — and I need scarcely point this out to business men — where there is local competition, where the only market for instance is in Canada, but where there are foreign markets, I think that a united effort in research is the one thing which will make the paper industry what it would be — one of the great world industries.

I want to give you some idea of this Research Institute, to enable you to decide whether it is possible for us to help you, and if it is, we want to do it. I am not going into the history of it. We have passed through many vicissitudes, but we have the promise of the Premier this year, and a certain number of the Cabinet, that the Research Institute will be established this coming summer. An Act — a preliminary draft of which I hold in my hand — was approved in the Committee of the House of Commons last year, and approved by a Special Committee of the Privy Council, and — although not brought forward formally as yet — it will probably be the Act which will govern the new Research Institute. I will not read it all to you, but I will tell you what we are after.

It says, among other things:

"The Institute shall have charge of:

(a) The investigation and determination of standard and methods of measurements, including length, volume, weight, mass, capacity, time and heat, light, electricity, magnetism, and other forms of energy, and the determination of physical constants and the fundamental properties of matter.

"(b) The standardization of the scientific and technical apparatus and instruments for government service, and for use in the industries of Canada, and the determination of the standards of quality of the materials used in the construction of public works and of the supplies used in the various branches of the Government Service.

"(c) The investigation and standardization of the materials which are or may be used in the industries, and of the products of the industries.

"(d) Researches undertaken with the object of improving the technical processes and methods used in the industries and of discovering new processes and methods which may promote the expansion of the existing industries or the development of new Canadian Industries.

"(e) Researches undertaken with the view of utilizing the waste products of industries.

"(f) Researches undertaken to promote the utilization of the natural resources of Canada.

"(g) The Institute shall have charge, direction or supervision of the researches which may be undertaken by or for single industrial firms under conditions to be determined in each case, or by such organizations, to be known as Trade Guilds for Research, as may desire to avail themselves of the facilities offered for this purpose by the Institute."

The Institute is to consist of a building 200 x 50 x 70. It will cost about three hundred and fifty thousand dollars. It will have a central power plant outside, capable of extension. That is the first unit. This will be built in such a way as to be fire proof, walls moveable, laboratories constructed to any size throughout the whole building. A number of smaller buildings, some of which are in existence at the present time, in the property we are considering, can be used for carrying on special work outside, away from the main building. These would be particularly for such industries as would require an especially large plant, and where the operations could not be extended over a very long period of time. In the main building, will be the administration department and a variety of laboratories under experts, to which the whole country could go for physical, mechanical or chemical data of their different works or industries. Much of the work will be directed toward certain industries which have a certain amount of standardization to be carried out.

It seems to me this institute is a pressing need of your industry, I will be direct and say why I think the Forest Products Laboratory failed to benefit the Pulp and Paper Industry to the fullest extent. I am a member of its advisory committee. It failed chiefly because its staff being under the Civil Service Commission, the Government did not pay salaries sufficient to obtain and retain first-class research men to carry on the work in these laboratories, which had such splendid possibilities. We expect to avoid this danger.

There is one clause in this Act which says that the Civil Service Commission shall not have control of the scientific appointments to the Institute, or even of their clerks or typewriters. It is to be entirely under the control of the Research Council, so we would be able, as a body — with the consent of the Committee of the Privy Council — to select whom we considered the best men in the country or of any country — because we are not going to be limited by the borders of Canada in selecting the personnel — to form its staff of investigators.

The first thing would be to find a director, and when we remember that some of the large industries in the United States are paying from twenty to twenty-five thousand dollars a year for their directors, I do not think that Canada should be very far behind for a National Research Institute.

"Now, exactly how can this Institute be of use to the Pulp and Paper Industry? One thing is obvious. Experiments on a large scale must be carried on in the mills, but when you want the advice of the very best physicists, the very best chemists and engineers, the very best in a variety of different branches, the Institute will be able to give you that advice, and we trust that when this Institute is completed — which will be in about eighteen months — you will avail yourselves of the help that we hope to be able to give you.

I sincerely hope, Mr. Chairman, that this very influential Section of the Pulp and Paper Industry will endorse this idea of the Research Council, and use their influence to have it strongly advocated by the Government in the immediate future.

There is a tendency in political affairs, whenever there is opposition, to postpone a decision. It is absolutely essential for the future of Canada that this National Research Institute should be established at once. We hope to be able to break the ground when the frost leaves next spring.

Opinion of an Absentee.

The following comment on the Research Department is from a member (Correspondence to the Editor.)

Referring to the debate on the "Industrial Research Department" at the recent Technical Section meeting, one member is reported to have proposed that a Research Committee be permitted to establish themselves in various mills and "investigate conditions there." Surely this is a rather unfortunate way of expressing things. Let me ask, where do the scientific staffs already stationed at these various mills, "get off at," to use a vulgarism? Such an idea, if carried out in the manner suggested would likely cause untold friction.

If we are to have examiners, to examine the examiners (scientific staff) where are these super-men to come from?

They certainly do not exist in Canada to-day.

Such an idea might be O.K. for some mills, employing young and inexperienced workers, but how about the other mills with technical men of from ten to twenty years solid work in the P. & P. industry to their credit? Would these latter, smilingly lie low, like Brer Rabbit, while men of actually less experience than themselves sported around the mills trying to discover something wrong in the scientific organisation? No, I think not!

Now, Sir, I think that the idea of a Central Research Bureau is the finest thing possible, or will be, for the P. & P. trade, and that it will more then repay the industry for almost any amount of time and money spent upon it. As to the co-operation of the various technical men in the mills, I, for one, am fully prepared to do my bit in that direction, in fact I have already done quite a bit, in work not unconnected with the committee on Mechanical Standards.

Anyone who has done any research work around the mills, fully knows that there is an enormous amount still to do and that only co-operation on a large scale can bring much result on some of these problems. The committee on mechanical standards did not have much co-operations from other sources, and it appears that unless men of the greatest possible "tact" be picked for the proposed Research Department, that even worse may occur when the department gets to work.

The views expressed in this letter are purely personal, but after twenty years technical experience in the mills I think I am safe in saying — Beware of "Visiting Research Committees" and "Excelsior" to the idea of a Central Research Bureau with its affiliations with the various mills.

Yours truly,

"IDIOT."

P. S. Use of the word "tact" is not meant to cast any doubt on the committee of Mechanical Standards, but to point out that "tact" in the leadership of the proposed Bureau is likely to be as important as scientific knowledge.

Approved by the C. P. & P. A.

The report of the Special Committee was brought before the meeting of the Canadian Pulp and Paper Association, January 21. On motion of Mr. McKee, seconded by Mr. Kent, the reports of the Sections, which were in the hands of members (see last issue of this magazine) were accepted as read.

The President (Mr. Chahoon) then said: In Mr. McKee's motion he excluded the report to be made by Colonel Jones on some special work that we are all extremely interested in, and that is, our research work. This matter has been laid before all of you members, and I think we should hear Colonel Jones' report, and should take what action is seemed advisable. Colonel Jones, will you please read your report?

Colonel Jones: Mr. President and gentlemen: This is a report of the Joint Committee appointed by the Association, consisting of three members from the Technical Section, and three from the Association proper, to investigate the possibilities with respect to the institution of the Department for Technical Research within the activities of the Canadian Pulp and Paper Association.

The report as read by Col. Jones is found on page 127.

Colonel Jones added: This report was submitted to the Technical Section just in this way, and it was passed by them, accepted by them, and passed on by them to this general meeting.

The Committee, when they first undertook this work, perhaps had many doubts on the whole subject, but we had a most interesting meeting, and the final result was that we were of one accord, first, on the feasibility of the whole matter — the desirability of the whole matter — and then upon the general working out of the matter. That is, that it should be approached in a very slow and careful way; nothing at all radical was contemplated. We felt that in the first instance the great necessity was to secure the man with the ability to carry this work on; that a wide, important field existed for research development, and if the right man could be found who would review, first, the situation and discover what problems of research and general development were facing us, that he could, without having a laboratory to start with, and without too large a staff, commence this work. The Committee did not feel, for instance, that any results would probably be forthcoming for perhaps the first two years.

Of course, the great thing is to secure the man and the Committee have been devoting themselves to that, although they have no one in view. When I say "They devoted themselves to that", I mean in a very preliminary way, knowing, of course, that their final action depended on the result of the adoption of these recommendations today.

The President: I think we have all heard Colonel Jones' report of the work of this Committee with a great deal of interest, and I think we all appreciate very thoroughly the possibilities, and I would like to know if it is the pleasure of the Association as a whole to adopt in principle the report as made by this Committee. If so, will someone kindly move the adoption of the report?

Mr. Sabbaton: Mr. President; as a member of the Committee on which Colonel Jones has just reported, I would like to urge upon the Association that there should be a free discussion upon the question before the adoption of the report. If we are going to have a formal adoption with a lot of questions in the back of the minds of some of the members, we had better not adopt it. Unless the Association and the various mills are going to stand behind this movement and be willing to co-operate with each other, we had better not spend the thirty-five thousand dollars, because it will be absolutely wasted.

The question is a big one, and, as I said before, if it is going to be at all successful, it must be gone into whole-heartedly, and I think some of the members present should get up and say something about it, and ask some questions, and perhaps the members of the Committee may be able to enlighten them and help them on the way to work up some enthusiasm among the members.

The President: I think from what you have heard from Mr. Sabbaton that it is quite evident that Colonel Jones and Mr. Sabbaton and the other members of the Committee are quite prepared to discuss this matter in as much detail as you men would care to discuss it, and I think they are prepared to answer any questions, if you will be good enough to ask them.

As Mr. Sabbaton has said, it is a big question, and if this project is going to be worked to a successful conclusion, it has got to have — it must have — the hearty co-operation of everybody; everybody should be of one accord in the thing.

Personally, I believe that there are very wonderful results to be obtained by it if we go at it right. Now, if there is anybody who has not had the pleasure of discussing this question in person with the members of the Committee, will ask any question he cares to about the proposed work — how it is started, and what is to be accomplished, I think now is the opportune time to thresh the matter out.

The Secretary, (Mr. Dawe): We have had a great many replies to letters sent to members. In fact, we have received replies from over sixty per cent of the membership, and without exception, the replies have been in favor of the principles laid down.

Some of the members have gone further, and have gone to a great deal of trouble in giving their personal opinions of what should be done; where the pitfalls lie, and their doubts, is order that we may have the opportunity of explaining how these doubts may be overcome.

Taking it generally, though, the industry appears to be ready for the entire proposition, and are quite willing to accept the leadership of the Committee appointed by the President.

The Western mills are doing their own research work and perhaps some of them consider that they are too far away to be of any assistance. They have been giving their financial support, but they do not feel that they can give us much moral support on account of the distance.

Mr. Stadler has written a letter in which he states that it is his view point that there must be uniformity about it; that is to say, that every mill must come in and give their co-operation and moral support, and not merely write a cheque.

We have other letters from the St. Maurice Paper Co. and the Abitibi Company, and from some of the smaller mills, such as the Book and Writing Section.

The President: In that connection, I do think that it is the intention of the Committee to recommend that we do not get any central laboratory at this time, but only to use the equipment we already have. In talking this matter over with the Committee, I gained the impression that this organization which they hope to build up, would be able to use the facilities that we already have. For instance, if one mill has an equipment with an experimental digester to experiment on the use of the different woods and different kinds of acids and under different conditions, that all that class of work would be done at that mill and the results obtained would be distributed to the industry as a whole. Another mill might have an experimental grinder, or has facilities for making experiments along the mechanical end of the business, and all these experiments would be carried on in this plant and distributed to us.

Colonel Jones: The report, you will recall, states distinctly that an attempt should be made at the present time to build a central laboratory. As I stated, the first work of the Director of Research, as the Committee see it, should be to review the field, and to state what problem he finds. That is, he personally discusses with all the members of the Association the general problem and those would be studied and set forth. His great work to start off with would be the co-ordination of the research work that is at present under way. We think that is of vast importance — the co-ordination of the field of effort.

For instance, in one of our Committee meetings we found that three of the large mills had all been working on the same problem; all spending money on the same problem to attain the same end. Well, that meant that three times the amount of money, anyway, necessary to discover the same thing was being expended, and so co-ordination of effort would effect real economy on the face of it, and we believe that is one of the things we must get — the co-ordination of effort after the problems have been studied and the field reviewed, as I have said before.

Mr. McInnis: Mr. President and gentlemen, I just wanted to say a few words about this, because the only gentlemen who have spoken so far have been on the Committee, and in my wanderings around the hotel this past few days, I have found considerable difference of opinion on this thing, and I would like to express how I think we understand it now.

I do not think there is any question in the minds of any one of us as to the necessity for this project. It seems to be, and it is, in fact, absolutely necessary. In the Technical Section they came to the conclusion, I believe, that, so far as the Technical Section was concerned, they were ready for it. It was purely a question of whether the managerial end of the business was ready.

Now, I have a lot of doubts in my mind as to how this will be worked out, and so have other people. In fact, the Committee have already found these doubts and have drawn them to our attention, and it would be impossible, it seems to me for any one individual or any group of individuals to lay down just what method should be followed.

As Colonel Jones has so well stated, this thing is going to take two years before we can receive any adequate result, so the problem, it seems to me, resolves itself down to a point as to what method of procedure shall be followed. It looks as though it was impossible to say off hand what procedure shall be followed, except as appears in the good judgment of the Committee from time to time, and then work this thing out.

There are many pitfalls and many problems as well and a lot of questions might be asked on all sorts of things, and I do not see that, as far as the Abitibi is concerned, that we can do anything else except to say that we are for it, and to do all we can to work the thing out, but how it will be worked out, will have to be left in the hands of the Director of Research, and the gentlemen working with him.

The President: I also think this project should be accepted or rejected as a whole and the details of the work should be left to the incoming management of the Association.

Mr. McMillan: I think the work could not help but be beneficial, provided they have the support — the co-operative support of all the members of the Association. I should imagine that the doubt would enter in as to whether that work will be supervised continuously by men who are capable of getting the full benefits from it. The trouble is, in an experience of this kind, there is a "hit-and-miss" management of it. It starts out with a great deal of enthusiasm, and when the man in charge of the work needs help, it takes him a month or two to find somebody in the industry who can give him the help, but I think if the incoming administration of the Association will appoint a Committee which is willing to serve and direct the work continuously, I think perhaps the success or otherwise will accrue right in that actual supervision. I think failures in industrial work in your industry can be attributed more or less to the lack of time and effort put to that work by people who can give it, and I should imagine, after the criticisms I have heard, that this may get into a "drifting stage" and be nobody's job, and therefore, we would not get the benefits which can be obtained and which we so much desire.

Mr. Bothwell: I would be glad to move the adoption of the report of the Committee. I do not think there is any danger of it entering the "drifting stage", and not being successfully carried out under the able management of Colonel Jones, Mr. Sabbaton and Mr. Stadler.

Mr. Kent seconded the motion, which was carried unanimously.

Colonel Jones: I wish to thank the meeting on behalf of the Committee, for the confidence they have expressed in adopting the report, and I wish to point out now that the Committee was a joint committee appointed by our president, three from the management branch and three from the Technical branch, and our duties have been completed in putting the report before you, and getting the data together for it, and as it stands now, the work will really be in nobody's hands, and I just wish to ask that some action toward the continuation of that work should be taken at this meeting — some means of carrying it out. In other words, you adopted the report and there is no medium for carrying it out. There is no committee.

The President: The Association as a whole has approved the scheme, and now the incoming Executive will have to put the proper machinery in force to form a new committee to get the work started.

C. P. P. A. Approves National Research Institute.

Mr. Sabbaton: Before leaving the question of this research work absolutely, I would like to propose that this Association as a whole put forward a vote approving the confidence of the Federal Government in the establishment of a National Research Institute. (See p. 159.)

Colonel Jones has referred to that matter in his report, and the Committee is heartily in favor of this Act which it is proposed to bring down at the next Session, and I think the Government's hands would be materially strengthened if they had the approval of this Association to the Act that it is proposed to put into force.

I would like to move that this Association approve the form and terms of the Act which is entitled "An Act to Establish a National Research Institute."

Mr. McKee seconded the motion, which was carried.

First Volume of Text Book Appears.

At the annual meeting of the Canadian Pulp and Paper Association, the President Chahoon, called on Mr. George Carruthers, chairman of the Joint International Committee on Vocational Education, to report on the progress made.

Mr. Carruthers replied: I am pleased to report that splendid progress has been made with the manuscript which is to make up these text books.

Our industrious editor has discovered some considerable difficulty in connection with some of these manuscripts which are being written by very busy men; men who know their subject perfectly, but have so many other interests that it makes it rather difficult for them to deliver the goods on time.

We have, on the committee, a friend at Court, in the person of Mr. Kellogg, who has succeeded in getting from the printers at four o'clock on the afternoon of the day he left New York, the first volume of these text books, which consists of mathematics, reading, working, drawings and physics. If you will examine the volume which is on the desk, you will find that it does differ from the ordinary mathematics and physics in this respect, that it is made suitable for correspondence instruction, and the problems are set in terminology of the problems which arise in this industry.

The Editor, Mr. Stephenson, is present, and if there are any questions with regard to certain features of this course, upon which any one requires further information, I have no doubt he would be delighted to supply the information.

While on my feet, I want to express the feeling on behalf of the Committee, of appreciation for the confidence that has always been expressed by the industry on both sides of the line in the work we are carrying on. It is a difficult task to carry out in the manner we have in mind. We, of course, could have had the five volumes ready for you sometime ago, if it had not been for the fact that we are rather exacting as to the character of the information which we propose to have included in these volumes.

I trust, therefore, that it will meet with your approval to supply the other five thousand dollars which we need in order that the work may be carried on.

The New Officers.

A brief announcement was made last week, but lest any one miss the manner of their choice, the last item of the annual business meeting of the C. P. & P. A. is given, as follows:

The President: If there is no other new business to come before the meeting, it is time for me to fold my tent and ask for nominations for the incoming president.

Mr. Carruthers: Mr. President and gentlemen: I think that we have been particularly fortunate in the choice of presidents which we have had in the past for this Association. The reason for that is not far to see. Great care has been exercised in the selection of these men, and as you all know, we happen to be now in a period of readjustment, and we happen to have some very important problems confronting us, such as research work, forestry work, and so on, and for that reason, I think we should be particularly careful in this year's selection.

I have in mind a man who is a very charming gentleman, a man of outstanding ability, I refer to Colonel Percy Wilson, of Spanish River.

And, therefore, I beg to move that one ballot be cast for the President, and that it be cast in favor of Colonel Wilson.

The President: I think it is probably absolutely unnecessary to put that motion before this meeting, but as a matter of form, I will ask if there are any other nominations for the presidency? If not the Chair declares the nominations closed.

Everybody in favor of the election of Mr. Percy Wilson as President for the coming year, please manifest it by saying "aye"? Opposed?

(Carried unanimously with prolonged applause.)

(President Wilson, here assumed the Chair, vacated by Mr. George Chahoon, Jr., whose term of office expired.)

The President: Mr. Retiring President, and gentlemen:

I thank you indeed for this very hearty selection of myself to this honorable position. I feel it rather keenly because I know that we are entering a year when there is a good deal to be done, and more particularly because I have to follow a man as able as the retiring president. That has been one of the chief difficulties I have encountered in thinking over this proposition, but I will do my best in this position.

There is very important work to be done. The short discussion this morning about the research work this morning is on a very very difficult and important matter. I do not think it was made particularly clear that we do need so much in this work the actual cooperation of every individual mill. Some one very happily said yesterday, or the day before, that "those who close the doors to such inquiries, close out more than they close in; they shut out more than they shut in", and that is very true, because we each have our problems and this is the great solvent of these problems.

I consider it an additional honor, gentlemen, to hold this position, because I feel that the country from which I come has, to an extent, scored a victory in this connection. Some of you may have already deduced that I am an Englishman, but I want to say that I was baptized as a true Canadian the other day when Col. Jones won some of my money at my initial game of poker. So I consider that I am now qualified, from the point of view of nationality, of holding this position.

I want to say I should have had more difficulty that I have really had, in accepting this, if I did not know that I will be able to count upon the most excellent help of all those in executive positions here, and living so far from Montreal, as I do, it struck me as being very difficult to accept such a position, but I believe, —I hardly like to say they will do the "donkey work" —but I believe they will do a great deal of the hard work in connection with this matter. I believe the Executive you will appoint will do everything to assist me in this work.

As regards Mr. Dawe and Mr. Beck: I really have to throw myself on their mercy to do all they can to help me.

Gentlemen, I thank you very much for this honor, and I invite you all to come to the luncheon in the Ball Room at one o'clock, at which General Sir Arthur Currie will speak to us.

Gentlemen, there is a little business still to be done. The election of a Vice-president. Will you kindly make the nominations for vice-president?

Mr. Bothwell: I wish to congratulate you, Mr. Wilson. There is only one gifted orator in the industry, who so ably named you for president, so it is up to some of the rest of us to do our best.

We have with us a man who has been Chairman of our most important committee for several years. He has been "through the fire" for several years. I take great pleasure in nominating Mr. George M. McKee for the vice-presidency.

The President: Gentlemen, I can hardly conceive that there are any other nominations, but are there any? If there are no other nominations, I declare Mr. McKee elected vice-president and welcome him very much in that capacity.

The Executive.

At meetings held during the convention of the various Sections, the following chairmen were elected, who together with the President and Vice-president, make up the Executive:

Newsprint Section, George Chahoon, Jr.
Woodlands Section, S. H. de Carteret.
Technical Section, George Carruthers.
Book and Writing, H. F. C. Kent.
Felt Paper Section, W. E. Walker.
Mechanical Pulp Section, L. R. Wilson.
Sulphite Pulp Section, E. L. Crookes.
Kraft Pulp Section, C. R. Whitehead.
Board Section, J. F. Taylor.

The Chairmen of the Wrapping and Coated Paper Sections will be announced later.

If your wife was as careless around the home as you are around your daily work, you'd sure be in a devil of a pickle.

News From Europe

(Special Translation for this Magazine).

Trade Disillusion in Europe.

While consumers are waiting for greater supplies of paper and cheaper markets, the mills of various countries are endeavoring to protect themselves from "invasion" by foreign manufacturers. It seems to be the cardinal doctrine of nations today that the only safe course is to shut out others from their markets. How then is commerce to be carried on? The most astonishing economic dicta fall from the pens of French writers. Thus Mr. Omer Wilhelm, Fiscal Agent of the French Embassy in Berlin, says: "The commercial relations between France and Germany are far from having resumed their normal course. Our former enemies have been obliged—as a remedy for the collapse in their exchange—to close their frontiers almost completely to imports, admitting only those materials that are destined to nourish their own industry". Then, in the course of an examination of what French industries can gain from Germany, he continues: "We, too—need it be said?—should have **patriotism** of **exchange**, and so long as our own franc has not retaken the place to which it is entitled on the money markets of the world, we should purchase only what is indispensable—namely, raw materials and the implements of labor".—La Papeterie, January 10, 1921.

A somewhat different view is expressed in Italy. The Italians, it may be noted, have in the vicissitudes of war, seldom given way to hysteria. Speaking of trade disillusions, in particular, those of the paper trade, an Italian editor says: "Now, if we Italians would draw a conclusion for our part from these two tendencies (i. e. foreign competition and home production), we should first consider that there is truth on both sides. As to the outlook for a German intervention on foreign markets, not excluding the Italian, we have not had, and probable cannot have, the early and abundant supply of paper that consumers—and in particular the consumers of print papers—had the illusion to expect; it appears that all things are not rosy in the sources of foreign supply...... And here we should put consumers on their guard against an excessive amount of confidence in paper from other countries, while inducing Italian papermakers to be vigilant, because the new trade equilibrium has not begun, or to speak more correctly, has not been systematized, an equilibrium which, without precluding the entrance of foreign products, guarantees stability to national production".—Industria della Carta, December 31, 1920. (This is certainly a sensible and business-like view).

New Papermaking Fibres in Germany.

Probably no country has spent more time on the production of fibres than Germany, and one effect of this during the past year, has been a reaction against the enthusiasm of those makers of pulp who thought in the first excitement of discovery that they had found an adequate substitute for wood or cotton cellulose. Nevertheless Germany has succeeded in produlting two fibres which have stood the test of experience. One is a fibre produced from typha by the Typha Development Co., of Charlottenburg. According to a new patent (German pat. 308,564) the fibres are bruised by hand or mechanical means, treated with strong alkalies, and finally digested in suitably diluted bisulphite liquor. Or in a new process spun fibres of high grade are made from reeds. In a still later improvement on these processes the goods after cooking are hydroextracted and dried. It is said that the fibres thus obtained are soft, easily spun, and of decided tensile strength and ability to withstand wear.

Cellulose manufactured from marsh grass (Phragmites communis) appears to be the most successful, if a judgment may be drawn from a recent article in the Papier-Fabrikant, November 12, 1920. It is to be noted that typha and reeds or rushes are terms which have been loosely applied both by technical writers and even by those who have drawn up the specifications of many of these patents. The result has often enough been failure. Certainly reeds and rushes comprise a vast number of plants, some of them worthless as papermaking materials. But the grass or rush known as Phragmites communis and also typha have produced fibres with the characters just described, and there is evidence to show that they supply a real advance in manufacture.. — (From Zeitschrift fur angewandte Chemie, December 31, 1919, of Chemisches Zentralblatt, January, 1920.

The German Paper Industry in December.

In December, as in November, the paper industry was in general able to cover its requirements in raw materials without difficulty. Yet higher prices were reached again for many materials, in particular wood and old papers. With respect to rags it must be noted that some mills, which had previously manufactured them, were unable to carry on owing to the high prices. The supply of coal continued unsatisfactory; in Saxony it failed almost wholly as a result of the miners' strike. Water power conditions were extraordinarily unfavorable, so that many of the mills driven by water power were compelled to close down. However, an improvement began during the last week of December. Auxiliary materials, though maintaining their high prices, were obtained without difficulty. There was a general complaint of the lack of transport facilities, which produced disturbance in the sensitive state of business. In consequence of the unfavorable conditions of water power, the production of wood pulp was moderate; in fact nothing in Silesia during the first three weeks of December; while in south Germany it fell off thirty per cent. On the other hand the demand for wood pulp was active, even violent. The paper market as a whole was the best in many months. But the coal shortage and the results of the Spa negotiations have a depressing influence. — Wochenblatt fur Papierfabrikation, January 15, 1921.

AMERICAN WRITING PAPER COMPANY ANNOUNCES NEW CHICAGO MANAGER.

The American Writing Paper Company announces the resignation of Mr. J. A. Lemmon who has been manager of the Chicago Office of the Company located at 1601 Otis Building, Chicago, Illinois. Mr. Lemmon has not as yet announced any further connection. The vacancy has been filled by the appointment of Mr. A. Carey Huls, formerly Manager of the Cincinnati Branch of the Eagle-A organization.—From the Editorial Department of the American Writing Paper Company, Holyoke, Mass.

Men who work with their hands, and those who find work for hands to do, should feel that the ties that bind them together are stronger than temporary day wages.—Carlyle.

British Trade News

(From Our London Correspondent).

London, Jan., 26, 1921.

There is a fight against waste going on in the United Kingdom at the present time. It is one of those re-actionary side issues developed after a system of squandermania instituted to help win the Great War and naturally the Imperial Government is coming in for a good deal of criticism. Old sores are being disturbed and irritated. Some of the critics are like vultures watching the Ministries handling their stationery and paper supplies, and when they get a chance they pounce on them through the newspapers for explanations. Since the war ended many of these Ministries have passed through vicissitudes unknown to people outside them and Departments like the Pensions' Ministry have really more work to get through than they can really handle on paper and stationery. The work is all done on paper, cardboard, and fine printing paper and the records of the millions of men wounded, not to speak of relatives, naturally form a considerable pile in the archives of the Ministry. Critics, therefore, cannot understand why the bill for stationery and paper should be greater than it was in 1913. They cannot see that the Pensions' work has increased twenty fold and they forget that paper is not sold at the same price today as it was in pre-war days. It must also be remembered that the paper is made in British mills and the money paid for it out of public funds finds its way back directly and indirectly into the Government. As a typical example of what is considered waste for a Department that has now thousand of employees, it is pointed out that the estimate of the Ministry of Pensions for stationery was £70,000 and it actually spent £169,000. This year's estimate is £5,769,104; in 1913 it was £1,237,708. The cry raised is not really over the quantity used but over the price. Then, again, if the Pensions' Department had to do the same work in 1913 as they are doing today the estimate would be nearly as big as the 1921 one—if not bigger. The Food Ministry is singled out as one of the biggest wasters among Departments, having exceeded its estimate by 600 per cent. But some people forget this Department saved England from the same fate as befell some of the children in Austria some time ago. It had to use paper to fulfill its object and the work was just as important as propaganda on paper among our enemies, the cost of which is not known yet. The Post Office and other sections of the Government also come in for criticism from a Governmental Committee and anti-wasters on the large quantities of paper and stationery consumed and their report concludes with this significant statement: "The Committee decided that M.P.'s. should again be privileged to use white envelopes in the House of Commons instead of buff envelopes." And the President of the Committee remarked: It is a matter probably of £200 a year, which is not worth talking about over a whole year. Heaven help the Department that would express itself so. Yet the chairman of the Committee engaged to cut down paper expenses in one direction help them up in another. It is a good job they are not in Canada.

Cost of Paper Production.

These investigation committees raised out of Parliamentary circles to attack subjects like paper and stationery, have no practical experience of the cost of production and neither do they know where to start cutting down without injuring the work of a department. They say you spent £1,000,000 in 1913 and we expect you to do the same or something near it in 1921—and make a department a success. From a public point of view there is also gross ignorance prevailing. I understand that the British paper manufacturers are taking up a stand against this ignorance prevailing among the public and some enlightening literature will be issued showing that with the present taxation imposed upon them, the high cost of labor and raw materials, it is impossible to reduce the cost of production and sell paper as cheap as Germany in the English market. Of late printers throughout the length and breadth of the country complain of the cost of the paper they use and the paper manufacturers are now going to open their eyes. The cost of production has lately received considerable attention. It is a big subject, particularly when Scandinavian newsprint can be bought in London for 7 cents a lb. — and sometimes 6 cents. — but the Papermakers' Association has the matter in hand and various reports are being prepared What surprises me most of all is that some statement has not been made long ago by the Association on the cost of production. It would have relieved public ignorance and shut up the mouths of those who are crying about the waste in Government Departments.

Technical.

The Technical Section of the British Papermakers' Association is progressing very favorably and great interest is being manifested in the various meetings held throughout the country. At present the membership has reached 187. At a recent meeting, in Manchester, Mr. T. D. Nuttall, whose name will be known to many Canadians for his work in the Dominion, read a paper on "Developments in Papermaking from an Engineering Point of View." He pointed out the great scope there was in the beater room and the machine department for engineers of an inventive turn of mind and he recalled the fact that in these two sections of the mill remarkable developments had been achieved. The Aberdeen members of the Section are also making great progress in the direction of technical education for the rising generation. They want Scotland placed on a par with England and Ireland in the matter of schools for technical subjects and the members in the Aberdeen district are leaving nothing to chance to fulfill their object. At recent meetings some interesting papers have been read, among them being "Recovery Processes and the Utilisation of Waste in the Paper Mill," by Capt. Allan, while Dr. MacDonald expounded "Chemical Standards in the Valuation of the Raw Materials used in Papermaking."

Works Magazines.

For sometime past I have been looking through some of the magazines or papers issued by employers to their workers. Paper agents and merchants have in some cases similar magazines. But the works magazine is an important adjunct in the life of the mill or office worker. It is solely confined to news items of interest in the mill or agent's concern. Sport, games indulged in by the employees, and holiday snapshots are recorded, as well as movements in the way of promotions. By means of the works magazine the apprentice as well as the managing-director becomes acquainted of what is going on inside the firm's sphere of activity at home and abroad. Two notable elements are recently receiving much attention. One if the welfare of the workers, and the other a suggestion scheme. In the welfare scheme apprentices are educated, girls are specially provided for and the general workers as a whole are studied and encouraged to promote sick and benefit clubs, games and sports, indoor and outdor, and numerous other objects to help them socially and otherwise. In the suggestion scheme from the highest to the lowest in the firm is encouraged to make a written suggestion on anything that will tend to reduce cost of production, facilitate work and save time, keep expenses down, or improve trade. No matter what the suggestion is if it is sent in and considered worthy of adoption by the firm, a money prize is awarded. I am told the suggestion scheme is a great success in many works.

British Exports of Paper.

Of the exports from British mills in December the following were sent to Canada:—

Fine printing paper.	1,078 cwts
Writing paper	4 "
Other paper	111 "

There is a falling off in the exports to Canada and the trade is nothing like what it used to be 14 or 15 years ago. On the other hand Canada enjoys a good connection with the United Kingdom in supplying pulp boards, mill boards, etc.

Business in the British paper industry is still depressed and there is a good deal of unemployment at the mills.

At present everything points to the fact that 1921 will see a greater consumption of newsprint than heretofore. The tendency of newspaper proprietors to charge more for their papers means a slight enlargement in sizes of papers. I am informed by one firm that they are increasing their size to 16 and 18 pages and it is rumored that other London dailies will do likewise.

Canadian Boards.

During December last 9,151½ tons of strawboards reached various port in the United Kingdom from the Netherlands, Germany, U. S. A., and Belgium. Most of the supplies came from the Netherlands. The total value of these imports was £178,908. Of leather boards, 171½ tons, valued at £5,665, arrived from Sweden, Germany, Norway, and the Netherlands. Under these two headings Canada shipped nothing; but in the importation of millboards the Dominion occupied a prominent position. Out of a total importation of 2,998 tons, valued at £115,495, Canada shipped to English and Irish ports 1,017 tons 13 cwts. valued at £38,501, the remainder coming from Finland, Sweden, Germany, U.S.A. and Norway. Canada and Finland were the biggest suppliers. Cardboard and pasteboard imports in December reached 992 tons, valued at £64,250, and of this total the Dominion sent 20 tons 16 cwts. valued at £730.

The Pulp Situation.

Sellers of sulphite report enquiries being made, but business is slow owing to the dullness and depression that still prevails in the paper trade all round. Prices, however, are the same as quoted last week in the "Pulp and Paper Magazine." Some sellers feel disposed to part with groundwood a couple of points below the present quotations in order to encourage business.

Small shipments of unbleached sulphite are arriving from Canada. Most of the paper mills are well stocked with pulp.

CANADA TO MANUFACTURE HER OWN BLOTTING PAPER.

By running blotting over his machines, a manufacturer of paper has initiated the first attempt to turn out this product on a commercial scale in Canada. The credit of this project goes to the Cornwall branch of the Howard Smith Paper Mills where one machine is being devoted to the milling of blotting paper on a part time schedule. Because of the intermittent run it must not be assumed that the attempt is limited to experimentation. It is simply because the company is supplying a naturally limited demand for this product which is the outcome of a poor market. At the same time they wish to confine a portion of their output for introductory purposes. However, before the end of the last quarter of this year has elapsed it is expected to use one machine for the express purposes of producing this class of paper.

Obviously, the manufacturers are taking advantage of an unusually opportune time to produce at home what has been an imported product. Despite its reputation as a paper manufacturing country, Canada has always been dependent upon other countries with this indispensable article. But during the past few years, the price of blotting paper, like many other necessities, rose to such heights that it had to be regarded as a luxury by its buyers. Consequently, demand fell off, the manufacturers to the south of us withdrew it proportionally from the paper market, since which time the call has'nt warranted them exporting on pre war basis. But now, with an empty market, there is no reason why Canadian manufacturers should'nt be able to get a foothold therein and offset the influx of imported blotters which even in the normal coming period will be higher in price than home made ones because of duties, and the unfavorable rate of exchange that exists. It is possible that all this shall come about in a relatively short time. The raw material which goes into blotters is largely, if not entirely produced in this country. In the meantime, someone who speaks with authority points out that Sir Henry Drayton should now feel easier in view of the fact that Canada is to devote her paper interests to other than that of the newsprint industry.

NATIONAL FORESTRY PROGRAM COMMITTEE.

Remarkable interest in the matter of a national forestry policy is developing in the Middle West, and the Forestry Program Committee is working to crystalize this interest into action.

Plans are being completed for a series of addresses and conferences in and around Chicago Feb. 23 and 24, as one feature of this development. Tentative plans have now been made for Col. W. B. Greeley, chief forester of the United States, to speak on the forestry policy before the Chicago Association of Commerce, Wednesday, Feb. 23. That evening he will go to Milwaukee to address the City club, and both addresses will be based on the fact that Chicago is the greatest lumber market of the world, and that the Chicago Milwaukee district is a veritable hive of industry based on the use of wood. After the Milwaukee meeting Col. Greeley returns to Chicago, where plans are being made for an Interstate Forestry Conference on Feb. 24.

Too many old men put in their last years buying stained-glass windows for churches when they should be learning to shovel coal.

UNITED STATES NOTES

The Association of American Wood Pulp Importers at a meeting held in New York City last Thursday, went on record as being opposed to any proposal to place an import duty on wood pulp. It was explained at the meeting that the domestic supply of wood pulp was almost infinitesimal, and that, if a duty be levied, the wood pulp importers would merely add it to the price to their costumers, the paper manufacturers. Approval was given to a suggestion that representatives of the Association be sent to Washington to present this view to the Ways and Means Committee of the House of Representatives. The meeting also adopted a resolution calling for the appointment of an arbitration committee of ten to settle disagreements on contracts, particularly those resulting from cancellation of orders.

K. Matsunami, a paper expert from Tokio, Japan, arrived in New York last week. He is making a tour of American paper mills seeking data on paper and pulp production and costs involved in mill construction.

Charles Kolodny, formerly with Broadway Stationery Co., Boston, Mass., is now associated with the American Envelope Company of that city, a new organization which will supply both the commercial and papeterie trade. The new envelope concern has opened a large factory on Congress Street in which it is installing the latest equipment for envelope manufacture. Mr. Kolodny is president of the company.

Following the annual meeting of the directors of the St. Regis Paper Company, held recently in New York, it was announced that Carl B. Martin, until now assistant secretary and assistant treasurer, would be advanced to the secretaryship of the company. Frank A. Empsall, formerly secretary and treasurer will retain only the latter office. It was announced also that William H. Decker, acting general manager of the company's mills, has resigned. It is expected that General Manager C. C. Burns, who has recovered from a siege of illness that had incapacitated him, will resume his duties in a short time. Outside of these changes the company's officials continue as heretofore, with Floyd L. Carlisle as president.

Bringing to a close a tenure of continuous service extending over more than twenty years, George F. Drew, of Brunswick, Me., has resigned his place with the Pejepscot Paper Company as chief engineer. Mr. Drew intends taking up the practice of general mill engineering, operating from an office at Brunswick. Besides having designed a dozen or more units and plants erected since 1898 by the Pejepscot Paper Company, installing mechanical equipment and directing general maintenance of buildings, power plants, machinery and supplies, Mr. Drew planned and supervised the erection of numerous cotton, worsted, cordage and other textile mills in the New England States.

The huge power development undertaken at Boney Falls, Wisconsin, by the Escanaba Paper Company, entailing an expenditure of $1,000,000 is reported near completion. Stockholders were told of the progress of the work at the annual meeting held last week. It was stated that by March 5 all three of the new generators at the Falls dam would be in commission so as to transmit power to the company's pulp mill at Groos Mich., where it will drive the big battery of pulp grinders. The capacity of the mill will be doubled by the improvement. A $200,000 increase in capital stock to take care of the concern's great expansion was authorized at the stockholders' meeting.

Bonds, linens and ledgers of higher grade than sulphite have experienced a drop in price in New England markets averaging 10 per cent. Commenting on the drop, which was not an unexpected one, C. A. Young, of Carter, Rice & Co., Boston, declared that no further material decline in price on this grade is likely, at least until the labor and raw material markets become re-adjusted. Other papers, in Mr. Young's opinion have reached the bottom level and will hold unless there is an unexpected radical reduction in the price of sulphite.

The committee on forest preservation of the American Paper and Pulp Association submitted a report at a meeting in the Waldorf-Astoria, New York, January 29, recommending surveys of all forest lands, improved fire protection and encouragement to owners of forest area of 850,000,000 acres had been reduced to 550,000,000 acres, the report recommended that the Government be urged to take over the lands and make them part of the national forests unless the timber land owners showed more of a disposition to grow timber on the cut-over stretches.

The Union Bag and Paper Corporation inventories at the close of 1920 were approximately $4,505,000, compared with $3,019,678 in the previous year, an increase of $1,485,322.

The Corrugated Paper Manufacturers Association, Inc., was enjoined last Thursday in a decree signed by Judge L. Hand in the Federal District Court, New York City, from advancing and fixing prices to be charged for corrugated paper boxes, which are used by manufacturers for the packing and transportation of their merchandise. Officers of the Association consented to the entering of the decree. The complaint in a Sherman Law dissolution suit, alleged that since 1916 the association and its members have fixed and established uniform prices for their products by a conspiracy to prevent competition and restrain trade through a monopoly. The Government asked for a permanent injunction.

Several paper companies have followed the lead of the American Writing Paper Company in cutting prices. American Writing Paper reduced the prices of fine papers approximately 15 per cent., to take effect immediately. It is reported that prices of bleached sulphite pulp, which is used in the manufacture of fine papers, have dropped $200 a ton to $140 a ton. Early in 1920 this grade of pulp sold as high as $220 a ton. Reductions of from 8 to 10 per cent in prices of bags and wrapping papers are now being made generally. Union Bag and Paper Company has already reduced prices about 10 per cent. The cut in fine papers, bags and wrappings is expected to result in a considerable increase in business, as many buyers have been holding off awaiting lower prices.

PULP AND PAPER NEWS

Speaking before the Hamilton Scientific Association in Hamilton, Dr. C. D. Howe, of the Faculty of Forestry, University of Toronto, stated that, of the total land area of Canada, only forty per cent is capable of bearing trees of commercial size. The total area of forest land in the Dominion is 1,900,000 square miles and only one half of this is capable of bearing trees of the saw log type—that is with trunks twelve inches and up in diameter. The remaining territory bears only small trees that can be commercialized only as to post and pole size of lumber or turned into pulpwood. Dr. Howe made a strong plea for the protection of Canadian forests against fires, which were the greatest enemy of the wooded wealth of the Dominion and said that there was little use of talking of forestry until the country had better protection against fire.

An impressive memorial service was held in Trinity Methodist Church, Toronto, when a whole-hearted tribute was paid to the memory of the late Sir William Gage, late head of the W. J. Gage company, manufacturing stationer, Toronto. Representatives of numerous public bodies were present. Rev. Newton Powell and Rev. I. Tovell paid glowing tributes to the worth and work of the deceased.

The Fort William Paper Co. who are erecting a groundwood plant at Fort William, intend increasing the capacity to 120 tons and an offering of $1,000,000, first mortgage, eight per cent serial gold bonds, is now being made for that purpose. Col. T. Gibson, of Toronto, is the president of the company.

Hon. Beniah Bowman, Minister of Lands and Forests, in an address recently before the Toronto Board of Trade a few days ago, stated that several pulp and paper companies, now owning large areas of forest, were using aeroplanes for forest fire protection work and the province intended doing something in that direction in the near future. Before the Timber Investigation Geo. H. Gray, of Sault St. Marie, who has charge of the woods operations of the Spanish River Pulp and Paper Mills, Limited, referred to experiments which were made with a hydroplane on the limits of the company last year. He said that this season they were having a hydroplane built which would carry a canoe and five men and a month's provisions. The plane would be used for cruising purposes as well as for locating fires.

Robson Black, of Ottawa, Secretary of the Canadian Forestry Association, in an address in Toronto a few days ago stated that as a filler of pay envelopes and a provider of jobs, the forests of Ontario were worth all the mines ever uncovered or likely to be uncovered. He emphasized the point that the management of public-owned forests on a basis of permanent production called for the most liberal and intelligent participation by the provincial governments. This was true if for no other reason, than that all restrictive measures aiming to promote forestry conservation, were necessarily costly to the operator. It would be quite unfair to expect individual operators to apply to their own areas a patchy system of timber cutting and reforestation, unless similar regulations were made to fit their fellow limit holders and rivals in the same market. Before any general scheme of replanting there must come a fire-proof forest.

S. R. Hart & Co., Limited, manufacturing stationers, Toronto, have removed to their new and commodious factory premises and warehouse at 489-493 King Street West, where the facilities of the company are greatly increased.

George A. Howell, of the Howell Trading Co., Toronto, has been appointed permanent campaign chairman of the Federation of Community Service, which embraces some fifty charitable and relief institutions in Toronto.

The remarkable growth of the pulp and paper industry in Canada was traced by T. Linsey Crossley in an interesting paper read before the Engineering Institute of Canada at The King Edward Hotel, Toronto. Mr. Crossley remarked that the development and maintenance of the industry called for the display of great engineering ability, offering a field for the structural, hydraulic, electrical, mechanical, chemical and forestry engineers. The average per capita consumption of paper per year was about 125 pounds in the United States and 100 pounds in Canada and the United Kingdom. The paper was illustrated by moving pictures provided through the courtesy of the Spanish River and Riordon Pulp and Paper Companies.

Iroquois Falls has a champion hockey team this year. The Abitibi boys have just defeated New Liskeard 4-2 and Haileybury 5-2. Both games were fast and well played and as they were played away from home bring the greater credit to the papermakers. While the senior team was thus engaged, the Construction team brought a victory of 3 to 2 from Cochrane.

In a brilliant nip-and-tuck overtime struggle which was not decided until the last few minutes, the Grand'-Mere hockey team defeated La Tuque in the St. Maurice Valley Hockey League at the Shawinigan Falls arena Sunday afternoon. The score was 2 to 1 and the large crowd saw one of the most fiercely contested hockey games in years. Grand'Mere has now won two games to one for La Tuque.

NEW PULP MILL AT WOLFVILLE, N.S.

Among now pulp-making organizations are the Gaspereau River Light, Heat & Power Company, Limited, who are constructing a plant for making groundwood pulp at Wolfville, Nova Scotia. The Company expect to commence manufacturing very soon with an initial force of about twenty-five employes. Their mill will be equipped with one 30-inch grinder having a capacity from eight to ten tons of dry pulp a day. C. H. Wright is president of the Gaspereau River Company, and R. A. Godrey is secretary.

Technical Section

JOURNALS ABSTRACTED.

The following summary gives the list of periodicals regularly abstracted for the Technical Section and the T. A. P. P. I. Any suggestions or helpful criticisms will be appreciated.

Forestry Journals, by Mr. Clyde Leavitt.

English Journals, by Miss Collins.
- World's Paper Trade Review.
- Papermaker & British Paper Trade Journal.
- Papermaking.
- Papermakers' Monthly Journal.
- China Clay Trade Review.
- The Paper Container.

French and Chemical Journals, by Mr. A. P. Couture.
- Le Papier.
- La Papeterie.
- La Revue Universelle de La Papeterie.
- Bulletin du Syndicat des Fabricants de Papier et Carton de France.
- Chimie & Industrie.
- Canadian Chemical Journal.
- Journal of Industrial & Engineering Chemistry.
- Journal of the American Chemical Society.
- Journal of the Society of Chemical Industry.
- Paper.
- French Patents.
- Canadian Patent Office Record.
- Pulp and Paper Magazine.
- Chemical & Metallurgical Engineering.

American and German Journals, by Mr. C. J. West.
- Paper Trade Journal.
- Paper Mill.
- United States Paper Maker.
- Fibre Containers.
- The Paper Maker.
- Paper Industry.
- German Patents.
- Chemical Abstracts (Only such articles as are not listed under "Pulp & Paper" but which may be of interest to the Trade).
- Papier Fabrikant.
- Papier-Zeitung.
- Wochenblatt für Papierfabrikation.
- United States Patents.
- Journal of the Royal Society of Arts.
- Consular Reports.
- Proceedings of the American Society for Testing Materials.
- English Patents.

BOOK REVIEW.

PAPER AND ITS USES. — A treatise for printers, stationers and others. By Edward A. Dawe, Assistant Examiner of Paper, H. M. Stationery Office. 2nd Edition. London: Crosby Lockwood and Son, 1919. 162 pp. 26 figures. 35 samples of paper.

This little volume is an attempt to present a concise yet comprehensive treatise on the manufacture and uses of paper, which shall be intelligible to the student and to the printer and stationer, in the hope that it may be sufficiently progressive to lead to the study of the larger works on papermaking. We therefore, expect to find the chapters on raw materials, manufacture, etc. treated in an elementary and somewhat popular way. The man who desires general knowledge of the process will find just enough information here. The real student of papermaking will want much more than Dawe gives, and will, if he reads this book, be able to read Cross and Bevan or Witham much more easily and intelligently. The papermaker, however, will find much information in the last chapters (Defects and Remedies, and the Right Paper) which will give him a more sympathetic understanding of the requirements of the printing trades. They also will give the printer an idea of the various kinds of paper to be used for different kinds of work, and if carefully studied, should prevent many unjust criticisms of the papermaker. Obviously the best "job" can be secured only when there is a carefully controlled manufacturing condition and an intelligent selection of paper on the part of the printer. Thus the choice of tub-sized or engine-sized is often one of importance, since the tub-sized papers may develop an unpleasant smell which will not occur in engine sized papers. In the covering of straw boards, box boards or mill boards with colored papers, freshly prepared paste or glue should be adopted since old preparations may become acid and cause a change in color in the paper, a result that cannot be blamed upon the manufacturer.

A few simple directions are given for paper testing, but more detailed directions would be necessary for successful results.

The last chapter contains an alphabetical list of papers (22 pages) with a brief statement of the composition, method of manufacture and uses. There one may learn that Long Elephants are used by wall paper printers, that O. W. papers are specially prepared rag papers for water color drawings, that Porcelain papers are of the nature of celluloid, made of well beaten pulp and are used for Christmas cards, that Silurian Papers are grey papers mottled with blue fibers, etc., etc. The 35 samples show the various types of paper used by the printing trade, and give a description, the ream weight and approximate furnish. The sizes, terms, etc., apply, of course, especially to English practice.

CLARENCE JAY WEST.
ARTHUR D. LITTLE, Inc.

REVIEW OF RECENT LITERATURE.

A-15. Resistance of fabrics to climatic conditions and to ultra-violet rays. L. VIGNON. Comptes Rend., **170**, 1322-4, (1920). J. Soc. Chem. Ind., **39**, 481A, (July 15, 1920). The results of experiments indicated that the tissues of animal origin (chappe silk) are more resistant than those of vegetable origin (linen) to variations in climatic conditions and to the action of ultra-violet rays, the probable explanation being that the protein molecule is more resistant to hydrolysis than the cellulose molecule.—A. P.-C.

A-15. Catalytic action in the oxidation of cellulose. L. P. WILSON, J. Soc. Chem. Ind., **39**, 177T, (July 15, 1920). The viscosity of cellulose xanthate solution (viscose) for the manufacture of artificial cellulose fibers depends largely on the exact amount of oxidizing action to which the alkali cellulose is submitted. The oxidation may be carried out either by exposure to the atmosphere or by treatment by chemical means, e.g., peroxides or hypochlorites In either case the process can be greatly accelerated by the use of suitable catalysts. These catalysts are generally oxides or hydroxides of metals which exist in 2 states of oxidation, e.g., Fe, Ni, Co, Ce, V, Mn.—A. P.-C.

A-15. The composition of cellulose. HENRY ALDOUS BROMLEY. Brit. Paper Trade, J.; Paper, 20, 22 (July 14, 1920). A very brief review of some of the most important chemical properties of cellulose.—A. P.-C.

A-15. Lignin and reactions of lignin. P. KLASON. Ber., **53**, 706-11, J. Soc. Chem. Ind., **39**, 482A, (July 15, 1920). See also Paper, 20, 36, 38, (June 30, 1920). The naphthylamine ligninsulponate described previously (see J. Soc. Chem. Ind., **38**, 570A, 1919). has been investigated further. Its formation is considered to indicate the presence of the group R.CH:CH.CHO in lignin. It is formed in greater quantity from old than from fresh sulfite liquor and it would appear that the group CHR:CH.CH$_2$OH is present in the latter, and that the aldehyde, in part, at any rate, is gradually formed in them by atmospheric oxidation. It is concluded that coniferyl aldehyde and coniferyl alcohol are the principal constituent groups at any rate of the lignin of conifers.—A. P.-C.

A-15, Direct estimation of lignin in cellulosic materials. E. BECKER, Papierfabr., **17**, 1325-7, (1919); Chem. Zentr., **91**, 11, 347, (1920); J. Soc. Chem. Ind., **39**, 482A, (July 15, 1920). 1 g. of the finely divided material is mixed with 10-20 cc of 72 per cent H_2SO_4 by means of a glass rod. When the mass becomes gelatinous a further 80-100 cc of 72 per cent H_2SO_4 is added and the mixture allowed to stand for 24 hours. It is then diluted with 1-1½ parts of water, passed through a Gooch filter, washed with hot water dried to const. wt., ignited, and weighed the difference between the 2 wts. give the amount of ash-free lignin.—A. P.-C.

A-15.Certain aspects of the chemistry of cellulose from the colloidal viewpoint. GUSTAVUS J. ESSELEN Jr. J. Ind. & Eng. Chem. **12**, 801-3, (1920). It is pointed out that it is not unreasonable to expect that when ethyl or methyl alcohol is added to a $CHCl_3$ solution of cellulose acetate the alcohol is absorbed by the colloidal cellulose acetate, the OH groups probably being nearest the surface of the cellulose acetate particles. The resulting , improvement in solubility which occurs may then be explained as due to a combination of 2 effects: 1st, a swelling and possible increase in the degree of dispersion of the cellulose acetate; 2nd, a greater attraction for the $CHCl_3$ by the simple hydrocarbon radicle of the alcohol than by the more complex cellulose acetate. The theory is extended to explain the solubility of cellulose acetate in mixtures of alcohol and C_6H_6 and in phenols, which as a class, are excellent solvents for cellulose acetate. The action of such solvents as AcOH, ethyl acetate, and triacetin, which contain acetyl groups, is to be explained on the ground that they are presumably of the same general type as cellulose acetate. It is recognized that there are still other solvents of cellulose acetate which are not included in either of the above general divisions, and it is hoped that a correlation can later be made of many of the observed phenomena in these instances also.—A. P.-C.

RECENT PATENTS.

K-18. Machine for making plaster board. U.S. patent No. 1,349,777, JOHN F. MAKOWSKI, San Francisco, Cal. Paper, 27, No. 8, 26-8, (Oct. 27, 1920). —A.P.-C.

K-19. Machine for waxing, coating, or impregnating paper and the like. Br. patent No. 124,717, W. MAYER U.S.A. Chimie & Industrie, **4**, 516, (Oct. 1920).—A.P.-C.

K-20. Manufacture of parchment paper. Ger. patent No. 303,266, P. HOERING, Sept. 1, 1916. J. Soc. Chem. Ind., **39**, 653A, (Oct. 15, 1920) The leaves, or stalks, or both, of the reed made are subjected to the action of caustic alkalis under press., and the product after washing is employed as paper pulp without any special beating and without sizing. The material consists of bast fibers and parenchyma, furnishes a transparent, grease-proof paper of a brownish-yellow color. —A.P.-C.

K-23. Process and machine for obtaining a marbled effect on paper. Fr. patent No. 506,862. G. L. M. LABATIE, (Seine), France. Papeterie, **42**, 877-8, (10 Oct. 1920). The invention covers a process and a machine for making marbled paper continuously so as to give it the same aspect as paper marbled by hand. Adhesive is poured on the upper length of an endless belt having slightly raised edges and passing over rolls. Drops of color are produced mechanically on the surface of the adhesive and the paper is unwound from a roll and passed over the layer of adhesive so as to receive the required impression.—A.P.-C.

K-23. Artificial fuel. Br. patent No. 124,310, L. GRIMANI, England. Chimie & Industrie, **4**, 480, (Oct. 1920). An easily handled fuel is obtained by coating strips of paper with paraffin. They are then made into bundles, subjected to a very high press., and cut into blocks which can then be coated with resins, paraffin or gums.—A.P.-C.

L-5. Manufacture of cellulose acetates. Eng. patent No. 139,232, J. O. ZDANOWICH, Sept. 18, 1918. J. Soc. Chem. Ind., **39**, 483A, (July 15, 1920). The substitution of org. acids, particularly mono—, di—, and trichloroacetic acids, for H_2SO_4 has not given satisfactory results on acct. of their being weak acids. If, however, the chloroacetic acids are employed in the nascent state by adding a halogen to the acetylating mixt., they react more energetically, even at a low temp., and have no injurious effect on the cellulose mol. even at high temp. After the production of the more —and di-acetate of cellulose the esterification of the cellulose is too slow, but the addition of a small amt. of H_2SO_4 or other strong condensing agent readily completes the esterification, the cellulose passing into a clear colorless soln. of extreme viscosity. This soln. may be used directly for the production of films, artificial silk, horsehair, etc. The material pptd. in the usual way forms a transparent glass-like, tenacious material, and is sol. in $CHCl_3$ or acetone.—A.P.-C.

L-5. Cellulose esters. Br. patent No. 145,524-1919, Akt. Ges. für Anilin Fabrikation, Treptow, Berlin, Sept. 1, 1920. Chem. Met. Eng., **23**, 1036, (Nov. 24, 1920). Cellulose esters are prepared by subjecting to the usual processes of esterification a cellulose derivative obtained on treating cellulose with nitric acid in the presence of benzene.—A.P.-C.

L-5. Cellulose acetate. Br. patent No. 145,511-1919, Badische Anilin und Soda-fabrik, Ludwigshafen-on-Rhine, Sept. 1, 1920. Chem. Met. Eng., **23**, 989, (Nov. 17, 1920). Cellulose acetate sol. in acetone is dissolved in a fully hydrogenized monocyclic ketone such as cyclohexanone, to form solutions suitable for lacquering and for the production of artificial silk and films. A solvent or diluent, e.g., alcohol, acetone, ethyl acetate, or benzene, may be added to the ketone.—A.P.-C.

L.-5. Cellulose acetate compositions. Br. patent No. 146,212, British Cellulose and Chemical Manufacturing Co., London, Sept. 8, 1920. Chem. Met. Eng., **23**, 1036, (Nov. 24, 1920). A compn. for use as a coating material, or in the manuf. of artificial silk or films, or as a varnish, and which can be cast or molded, consists of cellulose acetate and the aggregate of fatty acids extd. from coconut oil. A volatile solvent such as $CHCl_3$, acetone, acetylene tetrachloride, or $CHCl_3$ and EtOH, is used in the manuf. of the compn.; and the proportions of solvent and of fatty acid are varied according to the purpose for which the compn. is to be employed.—A.P.-C.

L-5. Acetylcellulose and process of making same. U. S. patent No. 1,338,661, W. G. LINDSAY, Assignor to the Celluloid Co., April 27, 1920. J. Soc. Chem. Ind., **39, 445A**, (1920). Cellulose is impregnated with alcohol and benzene and then acetylated with a mixt. of acetic anhydride and benzene.—A.P.-C.

L-5. Preparation of a gutta-percha substitute from acetylcellulose resistant to alcohol. Ger. patent No. 317,145, O. SKALLER, Nov. 13, 1918. J. Soc. Chem. Ind., **39**, 445A, (1920). If a film obtained from acetylcellulose solns. be immersed for a short time in concd. alcohol, and then dried in air, it becomes quite insensitive to alcohol.—A.P.-C.

L-5. Preparation of material capable of nitration from wood cellulose. Ger. patent No. 300,069, C. CLAESSEN, Berlin, July 29, 1915. J. Soc. Chem. Ind., **39**, 429A, (1920). The dried pulp is rolled or pressed and the compressed material reduced to a fine state of division by a suitable wood-working machine. A uniform porous substance is obtained which can be nitrated in the usual way.—A.P.-C.

L-7. Treatment of artificial silk and staple fibers. Ger. patent No. 322,141, A. LAUFFS, Dec. 3, 1918. J. Soc. Chem. Ind., **39**, 686A, (Oct. 30, 1920). If suitable organic substances such as sugars, glycerol, and sol. starch be added to the water used for precipitating the fibers, the harmful effects of any CaO still present (most of the CaO is removed by a preliminary treatment of the water) is much diminished, and especially in dyeing, much more even results are obtained.—A.P.-C.

L-7. Cuprammonia cellulose solutions; artificial threads. Br. patent No. 145,035-1919, Glanzfarben Akt. Ges., Petersdorf, Germany, Aug. 18, 1920. Chem. Met. Eng., **23**, 941, (Nov. 10, 1920). Solns. of cuprammonia cellulose, which are permanent and capable of being satisfactorily spun, are obtained by the addition of sugars both of the grape-sugar group and of the cane-sugar group; the former are added to prevent oxidation of the cupric salt and of the cellulose, and an amount of 0.25 p.c. of the cellulose taken is sufficient; the sugars of the cane sugar group, of which refined beet sugar is the most suitable, are added to effect or maintain the hydration of the cellulose, and of these sugars it is sufficient to add 2 p.c. of the wt. of the cellulose taken, or a little more if the cellulose has not been decomposed. By the addition of a reducing sugar, it is stated that the solubility of CuO in NH_3 is increased, and the soln. of the cellulose in such soln. is rendered more rapid and complete.—A.P.-C.

L-7. Production of artificial fibers from cellulose solutions. Ger. patent No. 322,538, K. SCHREINER, Dec. 25, 1917. J. Soc. Chem. Ind., **39**, 719A, (Nov. 15, 1920). The method of producing fine threads by drawing out thick threads spun from wide orifices, is applied to cuprammonium cellulose solns. with the aid of slowly acting gaseous precipitants. After use the gases are passed into a well-cooled tubular vessel in which the moisture is deposited and the greater part of the NH_3 is absorbed; after being moistened and reheated the gases are used again to extract NH_3 from the threads. —A.P.-C.

L-7. Production of textile fibers from wood. L. ENGE; Ger. patents. No. (A) 302,424, March 13, 1917, (B) 303,293, June 24, 1917, (C) 304,313, June 26, 1917, (D) 304,312, Sept. 2, 1917. J. Soc. Chem. Ind., **39**, 444A, (1920). (A) By various methods, such as treatment with alkalis and then acids, or vice versa, followed by digestion in a closed vessel with a soln. of a neutral salt, a kind of half cellulose can be obtained from wood. Wooden logs and planks thus treated may then be mechonically disintegrated in a moist state, and further treated to obtain textile fibers. If they are heated under press. these are especially strong and light colored. (B) Pieces of wood not thicker than 1 mm. can be used instead of logs, and the chem. treatment is omitted. (C) The treatment of the wood before digestion can be varied. The acid and alkali treatment may be repaced wholly or partly by treatment with hydrocarbons, such as benzol, petroleum, naphtha, and gasoline, or by solns. of Na_2SO_3, NaCl, $MgSO_4$, etc., which do not readily dissolve lignin. The wood may be first heated with alkalis and then treated with argilloceous earth in AcOH or H_2SO_4. After one or other of the various treatments above mentioned the wood may be impregnated with oils and fats or solns. of metallic salts etc. (D) The bark bast of coniferous woods can be treated by the methods described under (A) or (C) or by gentle heating with dil. acid or alkaline solns., and is dried, moistened or oiled, and then carded. Bast fibers may also be obtained from branches. The carding operation demands that the fibers be evenly moistened or oiled to prevent breakage. Bast fibers are finer than those from the wood itself.—A.P.-C.

L-7. Waterproofing and hardening cellulose and its products. Br. patent No. 145, 611-1919, F. MOELLER, Cassel, Germany, Sept. 1, 1920. Chem. Met. Eng., **23**, 990, (Nov. 17, 1920) The process described in Br. patent No. 145,610-1919 may be applied to the treatment of vegetable matter containing cellulose such as wood, cork, straw, jute, hemp, linen, flax, artificial silk, yarns and fabrics obtained therefrom, cellulose derivatives such as cellulose hydrate, hydrocellulose, oxycellulose, kindred substances such as starch, dextrine, or fabrics and substances treated or impregnated therewith. These materials may also be hardened and rendered less sensitive to water by treatment with sulphur chloride, the deposited S being subsequently removed by a suitable S solvent. The products of this treatment may be parchmented and the fat-resisting material so obtained rendered water-repellent by further treatment with thionyl chloride.—A.P.-C.

The Markets

CANADIAN TRADE CONDITIONS

Toronto, Feb. 5.—Reductions in a few lines of paper and increased activity in manufacture and sales characterized the pulp and paper market this week. Dealers report that there has been a decided picking up in business. There have been considerably more sales than for some weeks past and enquiries are beginning to come in on something like the old basis as to number. Some wholesalers report having done more business during the past ten days than during the whole of January, particularly in the coarse grades of paper and toilet and tissue lines. While trade is a little quiet in book and writing papers there are signs of improving conditions and the outlook generally for a good trade during the spring is bright. Speculation as to likely price levels is still rife, some paper dealers declaring that quotations will not go any lower and that they are already down to rock bottom, considering the cost of manufacture, including the maintenance of the wage schedules. It is declared, too, that if papers were offered at half their present value, it would not stimulate trade any more. A certain element would still hold back and want it for less. It would appear as if necessity were the only element that would compel them to purchase. It is argued on the other hand that the mills must have more business, having now caught up with orders, and that more price reductions will follow. At the present time there is a tendency to sane buying and an evident disposition on the part of the trade to get back to normal and stable conditions as quickly as possible. That object is steadily being achieved.

SOME LINES DOWN.—Coated papers have dropped half a cent, sulphite bonds from four to six cents, book papers from two to three cents and writing papers about the same, since the first of the year. Vat-lined board is now quoted at seventy-five dollars per ton and filled wood board at one hundred dollars, being a reduction of fifteen per cent. Customers who today place orders for paper boxes can get quick delivery. During the past week there has been a decline of two cents on tag manila which is now quoted to jobbers at nine and a half cents. Bristols fell from one to two cents and quotations range from thirteen to twenty-three cents per pound. Some plants are making up stock lines which have been allowed to run low.

WRAPPING PAPERS.—Wrapping paper demand is improving from week to week and dealers and consumers are now coming into the field with fair-sized orders. Both mill and job travellers report that more and better-sized orders are being received and that the trade has brightened considerably. The lowering of prices on manilas has given an impetus to trade. Kraft is in fair demand and is improving in this respect. Several of the plants which were closed down for a time have announced that they will resume operations towards the end of the month, stocks having been considerably reduced in the meanwhile.

PAPER BOX BUSINESS.—Manufacturers are rather quiet but there is nothing particularly gloomy in the outlook. On the other hand a livening up of business is predicted for the near future and there are already signs of its approach. There have been substantial reductions in the prices of the finished product owing to the decrease in board prices. Chip and straw board are selling at sixty dollars a ton. The new ground wood pulp plant of the Canada Paper board Co., at Frankford, is now in operation.

TOILETS AND TISSUES.—The recent drop of ten per cent in these lines has had the effect of greatly stimulating the trade and fairly good volume of business is being done. The approach of spring is expected to add an impetus to the trade in light weight papers and optimism prevails among the jobbers and manufacturers.

BOOK PAPERS.—The book paper mills are not operating at full capacity and some of the manufacturers say they are not anxious to enter into contracts with the publishers until the cost of raw material becomes more settled and they know "where they are at." One leading manufacturer remarked that there was very little use entering into a hard and fast contract for, if prices went down, publishers would naturally object to paying the contract prices. He said that his firm had reduced prices somewhat and there was a disposition on the part of consumers to pay a little more than they first thought they should and he thought that any differences there were would be amicably settled. He pointed out the danger, however, of large consumers, department stores, banks and other institutions holding aloof much longer, as, when they do enter the market there was likely to be a shortage and cause a rise in prices. The mills can take care of their needs at present but when the demand increases there was a possibility of the inevitable happening in the way of increased prices.

PULP.—Stocks in most cases are heavy and there is a disposition to cut prices as a consequence. The mills are not producing anything like their capacity output. Groundwood pulp is being offered all the way from $65 to $75 per ton. Bleached sulphite is quoted at from $140 to $160 per ton and easy bleaching from $110 to $115. The market for kraft pulp is rather slow and prices range from $100 to $125. It is expected that there will be an improvement in the demand for all kinds of pulp in the near future as business with a number of paper mills improves.

A slight improvement in the trade is noted by many Montreal representatives of the Pulp and Paper Industry.

An increased local demand of wrapping paper is noted by a Montreal jobbing firm. The same firm states the trade in jute is very quiet although picking up slightly in the country districts.

Prices in some lines of the paper and allied industries have dropped a little —i.e. some lines of printing papers, jute, boards and bristols.

The export trade continues to be dull.

Patience with other people's faults is a duty. It is patience with our own shortcomings that counts against us.—Rochfoucauld.

NEW YORK MARKETS.

New York, February 5—(Special Correspondence).—Developments in the paper market show conclusively that prices on various grades of paper are being rapidly readjusted to more normal levels where there is every likelihood that demand will expand, thus making for a livelier market than has existed in recent months. Paper manufacturers are following the policy of producers of numerous other commodities and are reducing quotations sharply, evidently feeling that this procedure is the quickest way in which to restore confidence among buyers and to induce consumers to increase their purchasing.

The most important and significant development of the week in this connection is a reduction in prices of its products on an average of 15 per cent by the American Writing Paper Company, effective immediately. In making the announcement of the cut in prices, the company issued a statement which said, and which, incidentally, gives a very clear insight into the views taken by paper manufacturers on the present price situation:

"Manufacturing cost of both bleached sulphite pulp mills and of mills making fine papers do not warrant the reductions we list. Readjustments are made to meet the almost universal sentiment among consumers of papers and the printing trades, reinforced by advices of mercantile friends that so-called readjustments would restore confidence in the paper industry and bring a stable and active market within the shortest possible time. Since coming to the decision to yield to these importunities, the situation has been appreciated likewise by several pulp mills, many paper mills and merchants generally, and improvements in the manufacturing situation are already in evidence."

There appears scant doubt that the action of papermakers in lowering prices will result in bringing more buyers into view, because it is generally recognized that numerous users of paper have purposely held back in buying while believing that paper prices had to come down along with those on other commodities. It is felt throughout the trade that with prices on practically all kinds of paper and paper board getting down to levels where they are more in keeping with normal times that consumers will increase their buying operations, and although the market has not shown concrete effects of the price reductions just yet, there are plenty of signs that broader activity is not far off.

According to authoritative information, some book paper mills have further cut prices. It is stated that machine finished book paper is to be had down to 10 cents a pound f.o.b. mills in certain quarters, while this same grade of paper is available to contract buyers at 8 to 8.50 cents. As previously pointed out in this report, book paper manufacturers are in a fairly satisfactory position. Most of them have enough contract business to keep them engaged a greater part of the time but practically all of them are running on curtailed schedule. Apparently they hope by reducing prices to stimulate demand to an extent where they can obtain sufficient orders to operate their plants at full capacity. One only has to glance over an issue of any popular periodical these days and compare it with an issue of two or three months ago of the same publication to realize the tremendous drop in consumption of book paper in the interim. The reason for this of course is the falling off of advertising, but when business conditions generally improve it stands to reason advertising will pick up because manufacturers and merchants will necessarily have to exert additional effort and do more publicity work in the future to obtain business than they have during the war period, which should in turn increase the consumption of book paper.

The newsprint market continues to display a fairly easy tone. There seems little question that newsprint for spot delivery is coming into the market in excess of requirements, and prices obviously are affected. Spot news in standard rolls is being offered in some quarters down to 6.25 cents a pound at mills, and there have been reports of imported newsprint being available at even cheaper prices. Demand for spot print paper is narrow, due to the fact that publishers are managing to make contract supplies cover their requirements for the present. No change has occurred in the contract basis, which is maintained by the principal producers at 6.50 cents per pound at mills, although there is much speculation in the trade regarding the price which the leading manufacturing company is likely to fix for deliveries over the second quarter of the year.

Wrappings and tissues continue in light demand. There is nothing more than routine business in jute wrapping papers, and even the more popular kraft is moving in but small quantities at a quotable basis of about 9 cents a pound f.o.b. mills. No. 1 white tissues are quoted at $1.75 a ream.

The low grades of paper board are meeting with moderate demand. Plain chip is sought in relatively larger volume than any other kind of board and is bringing between $45 and $50 per ton at mills, with a majority of manufacturers naming the higher price. News board is quoted at $50 to $55.

GROUND WOOD.—The mechanical wood pulp market is in a very unsettled condition. Few buyers are in view, and so many prices are reported that it is next to impossible to determine what actual values are. It is known that domestic producers in some cases are offering ground wood for prompt delivery down to $65 a ton, and there have been rumor that odd lots of small tonnage have been sold at as low as $50 at mills. The probabilities are the market will lack a definitely established basis until consumers resume buying in something resembling normal fashion, because matters are such now that some sellers are holding firm for high prices while others are seeking to dispose of pulp at whatever they can realize on it.

CHEMICAL PULP.—Demand for chemical wood pulps is narrow, so narrow, in fact, that the market is characterized by little or no activity. Paper manufacturers generally claim to have present requirements taken care of, and doubtless partly because of the downtrend in prices, are mostly indisposed to buy excepting of course when pressed by necessity. Quotations are irregular and prevail on a wide range. As a matter of fact, quotations mean little today for the reason that buyers invariably can secure the pulp desired at substantial reductions from the prices asked. Most members of the producing and distributing trade are simply marking time, feeling that to endeavor to market pulp at this time would only result in further weakening conditions against themselves, and believing that within the course of a few weeks longer demand for pulp will revive.

Imports of pulp at the port of New York this week included 900 bales and 762,000 kilos from Gothenburg, and 300 bales from Kobe.

RAGS.—While there is a fair call for some grades of old papermaking rags, the market as a whole continues in the throes of a dull spell, and the aggregate movement into consuming channels is of little consequence. Buyers are absorbing moderate amounts of roofing stock and of old white rags, and these rule steady in price, but new cuttings are neglected and quotations on such grades are sloping off. Offerings to mills have been reported of No. 1 white shirt cuttings at 17.50 cents a pound at shipping points, of fancy shirt cuttings at 8.75 cents, of unbleached muslin cuttings at 13.50 cents, of white lawns at 15 cents, of new blue overall cuttings at 9 cents and of No. 1 washables at 7.50 cents, and few buyers have been attracted by these prices. Roofing rags are moving to felt mills at a cent per pound, or slightly higher, at shipping points for No. 1 packing. Old No. 1 repacked whites are quoted at between 9 and 9.50 cents, and old repacked thirds and blues at 3 to 3.25 cents.

PAPER STOCK.—There is a divided state of affairs in the old paper market. High grades are scarcely wanted by consumers and are tending off in price, whereas low qualities are moving in fairly good volume and are holding quotably steady. No. 1 mixed paper leads in demand and is fetching 50 to 55 cents per hundred pounds f.o.b. New York, and folded newspapers meet with a fair demand at 65 to 70 cents at shipping points. There is also moderate activity in white news cuttings at 2.75 to 3 cents a pound and in container manilas at 60 to 65 cents. Shavings, on the other hand, are lower, with offerings of No. 1 hard whiteno ted at 5 cents a pound, and a shade less, and of No. 1 soft white shavings at 4 cents. The pulp situation undoubtedly accounts for the light call for high-grade paper stock and conditions at consuming plants must necessarily improve before waste papers are likely to be sought in increased amounts.

OLD BAGGING AND ROPE.—Paper manufacturers are occasionally coming into the market to absorb small parcels of old rope and are paying around 4 cents a pound for manila rope in No. 1 condition. There is, however, not enough demand to sustain values and quotations are tending lower. Old bagging is in a dormant condition and buyers are enabled to get stock at very nearly their own figures. Offerings of No. 1 scrap bagging at 1.75 cents a pound and of roofing bagging at 75 cents per hundred pounds meet with few takers.

Lagerloef Trading Company Inc., 18 East 41st Street, New York City, have found it necessary, owing to their rapidly increasing business in the West, to open an office at 1932 Conway Building, Chicago. Mr. Robert D. Krudener is the manager. They extend a cordial invitation to any of their friends to visit this office whenever they are in that city.

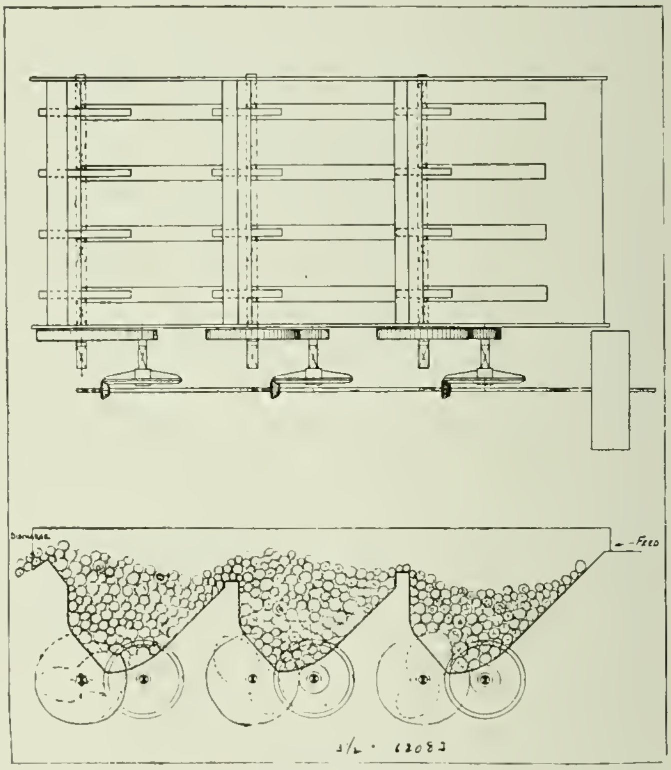
The firm of **Daniel M. Hicks, Inc.**, 200 Fifth Avenue, New York City celebrated its twenty-fifth anniversary last month. The business was started in December 1895 by the late Daniel M. Hicks who, previous to establishing his own firm, was for more than twenty years in the paper stock trade. The present firm, which are dealers in and importers of paper mill supplies is in charge of his three sons.

INDUSTRIAL ITEMS.

Thorne Barking System.

During the past few years the continued advance in the cost of pulp wood has concentrated the attention of pulp mill engineers on the wide field for economy in the preparation of logs for the mill. The introduction of the drum type of barker was a step in advance of the old methods of mechanical knife barking but still left much to be desired. The waste of wood in sawdust due to the necessity of slashing the logs into short lengths before they could be introduced into the drums and the loss from the broomed ends, is a very appreciable item in the cost of pulp manufacture. This problem was studied in all its phases by Mr. C. B. Thorne, Technical Director of the Riordon Company Ltd., makers of high grade sulphite pulp, and in 1918 his first barker was developed, built and operated commercially at the Hawkesbury mill. At the present time all the wood at the mill is being barked by this method.

At the Temiskaming mill of the Riordon Company Limited, three of his units are installed, handling logs in sixteen foot lengths and others are in the course of design, so that the barking capacity next season will be sufficient to handle one and a half million sixteen-foot logs per month. In developing this new method of barking, Mr. Thorne had the following purpose:



To eliminate, as far as possible, manual handling of the logs from the time they are placed on the haul-up until they are delivered to the chippers.

To abolish slashing and avoid the needless loss in sawdust.

To bark the logs clean without loss of pulp wood and at the same time avoid brooming the ends.

It was also desired to stock-pile the logs in such a way that the maximum drying effect could be obtained. The fact that the logs are not slashed before barking permits them to be easily mechanically stacked in ranked piles by means of locomotive cranes and grapples, thus allowing a free circulating of air through

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the piles and thorough evaporation of excess moisture.

The logs are reclaimed from the piling ground without the aid of manual labor in the same manner and are slashed into eight foot lengths before feeding to the chippers. This slashing is only done to aid in culling rotten hearts. A marked economy in high percentage of good chips is effected due to feeding long lengths into the chippers.

The principle of the barker is illustrated in the cut.

The machine consist of three trough-shaped pockets made of steel plate. For sixteen-foot logs, the troughs are eighteen feet long and have parallel perpendicular ends. In the bottom of the pockets are slots through which the wings of the double ended cams act on the logs to give them a rolling and rubbing action on each other, which effectively removes the bark. A heavy spray of water is played on the logs in the pockets which washes the loose bark out of the machine through the cam slots into troughs below, which carry it away.

The logs are introduced into the feed end of the machine by chain conveyors, the logs travelling sideways. The details of the necessary conveyors have been perfected to distribute the logs automatically from the top of the haul-up into transfer conveyors conveying the logs in a direction at right angles to the haul-up chains for distribution to a series of barkers side by side and from the transfer conveyors to the feed conveyors where their direction of motion is again changed back to that which obtains on the haul-up.

The pockets are fed continually and the logs discharge themselves from the lip of the last pocket at the same rate as fed. The cams, four to each pocket, are steel castings and so designed that the line of force on the logs is normal to the cam face at all parts of the lift. The cams are of the two-wing type about six feet in diameter over the tips of the wings and are driven at a speed of fifteen revolutions per minute by means of cut steel gears from a main line shaft at right angles to the cam shafts. The cams working in any one pocket are all set in line in order to act together to lift the logs to impart the rolling motion, but are set sixty degrees apart in the three pockets relatively to each other in order to equalize the turning effort on the driving motor.

Pockets have been constructed with grids in the ends to permit observation of the cam action on the logs and a close study of this assisted materially in perfecting the machine and developing its large capacity. The peculiar rolling action given to each individual log in the pocket regardless of whether it is actually in contact with the cam or not during the period of lift is responsible for the rapidity with which the bark is actually rubbed off without damaging the log iself and was not attained without trial of many combinations of shapes of pockets and cams and rates of cam speed, both on the actual machine and on small models.

There is, of course, a tendency for some logs to remain in the pockets longer than others, but by feeding at the normal capacity of the machine the percentage of overbarked logs is negligible and those which are discharged before being fully barked are dropped through a gap in the conveyor carrying them from the barkers to the log cars and returned by means of another conveyor to the feed end for another passage through the machine.

The barkers at the Temiskaming mill have been fed at the rate of fifteen cords of wood per hour each with an input to the motor driving each unit of one hundred and seventy-five horse power. The ultimate capacity of the machines themselves has not yet been determined as feeding rates have been governed by limited transportation facilities between this battery of barkers and the log piling ground, the project still being in the construction stage.

A feature of considerable importance is the exceptionally low maintenance cost on a machine of this type. The only moving parts being the shafts, cams and gears. The pockets so far have been made of thick plate supported by heavy timber framing well bolted together. Additional permanence will be given to future machines by making the frames of reinforced concrete. The cam shafts are steel forgings eight inches in diameter with a babbitted bearing close to each cam. The main line shaft and machine cut cast steel gears are liberally proportioned and all bearings are of the collar oiling type, bolted to steel yokes imbedded in the concrete foundation walls. Every effort has been made to make the mechanical parts both efficient and rugged.

The operation of the Thorne barkers at the Temiskaming mill has been studied by many prominent pulp men during the past few months and their opinion has been unanimous that Mr. Thorne has succeeded in developing a method of barking which will revolutionize wood handling practice.

The Canadian Allis-Chalmers Co. Ltd., have been given the selling rights for the Thorne barking system for Canada and Newfoundland.

The business of **M. G. Tibbits** and **Trimbey & Allen**, Glen Falls, N. Y. has been consolidated and will be carried on in future under the name of Trimbey & Allen with Mr. M. G. Tibbitts as sales manager. The offices and factory will remain at Glens Falls, N.Y.

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Tenders will be received by the undersigned up to and including the 15th day of June, 1921, for the right to cut pulpwood and pine timber on a certain area situated on the Nagagami River and other territory adjacent thereto, in the District of Algoma.

Tenderers shall state the amount per cord on pulpwood, and per thousand feet, board measure, on pine, that they are prepared to pay as a bonus in addition to dues of 80 cents per cord for spruce and 40 cents per cord for other pulpwoods, and $2.50 per thousand feet, board measure, for pine, or such other rates as may from time to time be fixed by the Lieutenant-Governor-in-Council, for the right to operate a pulp mill and a paper mill on or near the area referred to.

The successful tenderer shall be required to erect a mill or mills on or near the territory and to manufacture the wood into pulp and paper in the Province of Ontario.

Parties making tender will be required to deposit with their tender a marked cheque, payable to the Honourable the Treasurer of the Province of Ontario, for fifty thousand dollars ($50,000), which amount will be forfeited in the event of the successful tenderer not entering into agreement to carry out conditions, etc.

The said $50,000 shall remain on deposit until the pulp mill, as provided by terms and conditions of sale, is erected and in operation. Any timber cut in the meantime shall be subject to payment of dues and bonus as accounts for same are rendered. After the said pulp mill is erected and in operation, the deposit of $50,000 may be applied on account of bonus dues as they accrue, but the regulation dues as mentioned above shall be paid in the usual manner as returns for cutting of wood and timber are received and accounts rendered.

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All tenders should be enclosed in sealed envelope and marked plainly on outside, "Tender for Nagagami Pulp and Timber Limit."

BENIAH BOWMAN,
Minister of Lands and Forests.

Toronto, January 24th, 1921.

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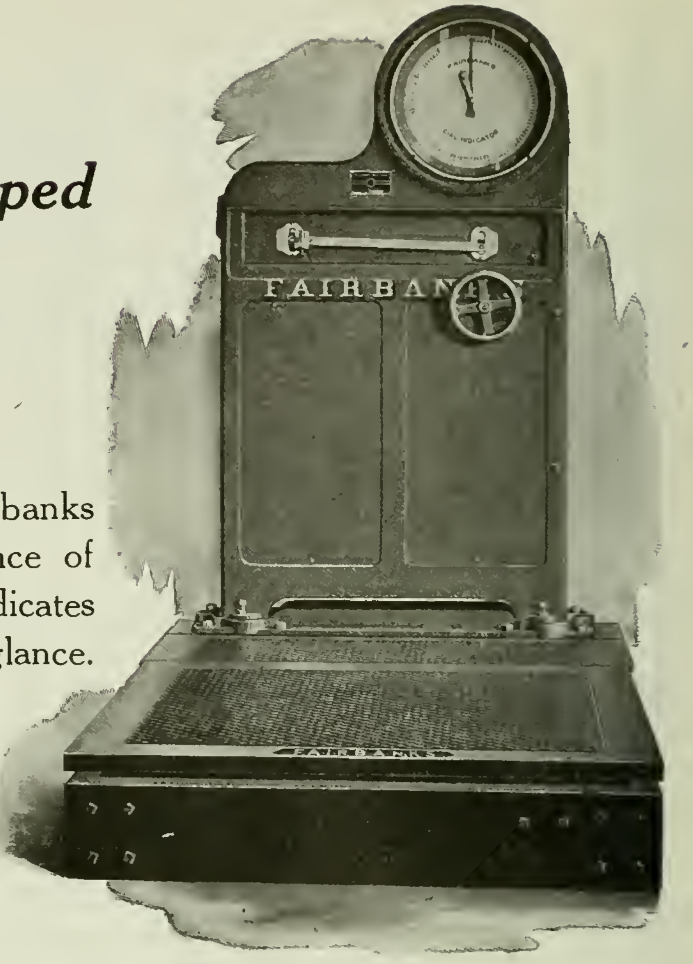

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EDITORIAL

EMBARGOS AND TARIFFS.

The Wood Pulp Importers in the United States evidently expect the coming Republican administration to consider a revision of the tariff on wood pulp. This material, of whatever kind, is now admitted free of duty. A statement of the argument the Importers are making to the Ways and Means Committee mentions that 600 paper mills use but do not make pulp, while only 15 mills make pulp for sale. The request is made that, if a duty for revenue be found necessary, such duty be "specific" and not "ad valorem."

With nearly a million cords of pulpwood from fee lands in Canada converted into pulp in the United States, and with the pulp imported rising from 27 to 45 per cent of the total used in the last two years, it is a curious coincidence that the plea of the pulp importer comes at a time when there is a growing sentiment in Canada for some restriction on the export of all pulpwood. The importer of pulp is, of course, acting in the interest of the paper mills he serves.

An import duty by the United States should have no effect whatever on Canadian pulp exports, since other pulp producing countries would be similarly affected. It might, however, have a good effect on our exports of papers made from wood pulp as the price of these would be increased in the States by the tariff on pulp while there is already a duty on the finished paper and this would perhaps not be proportionately increased.

On the other hand, an export duty on wood would certainly benefit Canadian pulp mills by putting American mills at a disadvantage and by materially extending the life of Crown limits. Mills in the Eastern states would be obliged to bring wood from the Pacific Coast, Alaska, Newfoundland, or Labrador or even Russia until reforested areas could reach a productive age, which would be an enormous hardship to such mills as have no adequate wood supply and the communities supported by them. In the meantime, unless marked improvement be made in the protection and administration of our own Crown lands, we greatly fear that such a tariff would be merely a fence behind which the present generation of pulp and paper makers would immensely profit because it would simply defer the day of Doom, when our forests, now rapidly disappearing, will be exhausted. If such a restriction is imposed, it is only fair the seller of fee land wood be compensated by an assured market and that the advantage accruing to our pulp mills be paid for by greater expenditures for better operation and protection of Canada's forest lands.

CORPORATIONS HAVE SOULS.

A few years ago it was quite common to hear a large employer of labor referred to as a "soul-less corporation." In some cases it was probably correct. The situation has, for the most part, materially changed for the better. We believe there are three reasons—a more enlightened and expressive public sentiment, the demands of organized labor, and a growing realization on the part of both employer and employee that profit for one and contentment for the other depends on mutual understanding, responsibility and fair dealing.

Of these three reasons, the first and last are the most important. The last is largely a result of the first and the first is often promoted or aroused by the second. The second, however, seems largely influenced as to its effect by general conditions of employment. The growing desire to co-operate happily with his employees on the part of most employers, because his heart so dictates and because his balance sheet shows it pays, is the most important aspect of business today. It means that we are at last getting down to the firm basis of the solid rock of open and honest dealing.

The labor unions have played a large part in arousing public sentiment and awakening the employer's conscience and will continue to have an important influence on the welfare of the community if they are willing to follow the constructive advice of wise leaders, selected for their knowledge of affairs rather than their ability to vituperate and incite.

That a union is neither a necessity nor a hindrance in the establishment of cordial relations in a contented community between employer and employee is well illustrated by the happy experiences of two large paper mills in Canada. They show that sincere personality is the basis of cordial co-operation and contentment. The difference in the character of the majority of employees, due largely to the influence of racial characteristics is an important factor in the courses of the development. The manner of treatment in each case is a triumph of the psychology of management and proof that where the employer is determined to be honest and sincere and generous, his employees will recognize it and respond by being loyal, responsible and contented.

We refer to the Abitibi Company and the Laurentide Company. The former is located at Iroquois

Falls, Ont., and the latter at Grand'Mère, Que. The Abitibi mill is thoroughly unionized and the Laurentide is a straight man-to-man organization. Why this mill was de-unionized about twelve years ago and is still without any outside affiliation is well told in an interesting story in the New York Times, to which, by the way, the output of the new machine is being shipped. This story is largely a repetition of the findings of the Industrial Relations Commission which inspected employment conditions last year. It retells the story of how the mill was once closed by a strike brought on by conditions in another mill, in no way connected with Laurentide, in spite of the contentment that reigned at Grand'Mère. Rather than suffer from what was considered outside interference, the mill seceded and the settlement of questions that might elsewhere lead to a strike has since been left to the Priest and the President. A friendly conference has never failed to bring an immediate solution satisfactory to both men and management.

But Iroquois Falls is also a prosperous and contented town and the unions are particularly strong and well managed. The cordiality existing between the mill men and the management was exemplified by an incident that occurred the last time the Editor visited the mill. A general strike was on and the mill was down for a few days in consequence. As in the case at Laurentide twelve years ago, the men had no complaint locally and there was feeling of animosity to be detected on either part. When word came to resume work, everything went ahead as usual.

With such examples as these it may be expected, as it is hoped, that men and mills where conditions are well-nigh ideal will not be penalized because of unfairness on either side in some other plant. Such general strikes, as they affect contented communities, are in the nature of sympathetic strikes and these are in growing disfavor in the opinion of the public.

It is a sincere compliment to the men and the managements of the paper and pulp mills of all America that cordial relations are so general and labor troubles so rare. When, with his mills closed, a pulp man employs as many as possible in making repairs and assures the rest of his people against discomfort, we have a happy state of affairs of which we may indeed be proud. Let the mill be union or non-union, if the management is honest and generous and the men are loyal and fair-minded, as they generally are in the paper industry, it will be plainly evident that corporations, now-a-days, have souls.

COBWEBS.

The new Alcoholic Liquor Act of Quebec, in the light of Premier Taschereau's remark that he desires to encourage the use of wines, and the statement that the Government intends to have a law which can be enforced, seems to be a slap at prohibition and ostentatiously an encouragement of temperance.

We were delightfully fooled by the story of the suicide at the Iroquois Falls school house as told in the "Broke Hustler."

It is estimated that the domestic consumption of pulpwood in Canada in 1920 was 3,500,000 cords, compared with 2,428,691 cords in 1919.

With Martin's "Papyrus" for January, the John Martin Co. includes a very interesting and instructive supplement on the cost and profit in running a country newspaper.

Twenty-five cents will be paid for copies of the Pulp and Paper Magazine for January 20, 1921. There has been an unexpectedly large demand for this issue, which is now completely sold out.

The Boston News Bureau says, in an editorial on "Why Newsprint Stays Up" "It takes 75 years for a spruce tree to grow to logging size; and the annual growth of our forests is more than annulled by fire and worm. Our pulp forest resources are as much an 'exhausting proposition' as the mine which must close when its ore is gone, and we are fairly in sight of the end."

The inspiring address of Mr. W. P. Burnett, on page 188 of this issue splendidly supports our contention that corporations have souls.

SIR WILLIAM PRICE ENDOWS CHEMISTRY COURSE.

Laval University, Quebec, which was recently the recipient of $25,000 foundation from the Price family, has decided to use the money to encourage scientific studies, and especially the students of the new course of chemistry, which is to be organized next year. The revenue from the foundation will be divided into two or three scholarships.

Sir William Price, whose pulp company had already subscribed $25,000 to l'Aide a Laval, in presenting the additional $25,000 as a foundation wrote to Mgr. Pelletier as follows:

"Monseigneur:—For many years my family has lived and worked in this part of the Province of Quebec with the French-Canadians on the most cordial terms.

"As the head of the Price family, and to show its appreciation of the happy relations with your people, I would esteem it a great privilege if your university would accept a foundation in the name of the Price family.

"This foundation would be a capital sum of $25,000, the revenue from which would be at the disposal of your university.

"If this is acceptable to you, I would suggest that this sum, which can be paid over during the next three months, be placed in the hands of Sir George Garneau and myself, as trustees.

"I have asked my friend, Sir George Garneau, to hand you this letter and to act on my behalf."

Ventilation of Paper Mill Machine Rooms

By H. S. TAYLOR.
Chief Engineer, Management Engineering and Development Co.

(Address at meeting of Technical Section, C. P. & P. A., Montreal, Jan. 20, 1921.

The problems of heating and ventilation of structures designed for the accommodation of the human being, either as a place of residence, travel, toil, or for recreation, have from early periods received much intensive study, and as a result the heating and ventilating engineer of today is in position to specify a most efficient installation, whether it be a simple hot air equipment for the modest dwelling or the complicated system of air handling equipment required to ventilate the many miles of subway and tubes in and about the largest city on the continent.

In selecting the two illustrations as above mentioned you will note that in the case of the modest dwelling, the requirement is one of heating, whereas for the subway it is one of ventilation. - The underlying principles of these two requirements, however, are the same; and in many installations the objective of the one single operation is both heating and ventilation. Take for instance the modest dwelling, the objective is to replace the volume of air within with a like volume, containing heat units of a number sufficient to raise the temperature, and hold it to the desired temperature, and further, this replacement of air change, we will call it, must be even and continuous; the rooms must therefore be ventilated so as to give the desired circulation which makes an air change possible. A simple test of this statement is to shut tight the door of a room in which there is a connection from the hot air furnace and note that so long as the room remains tightly closed the heating is barely noticeable.

In the case of the subway the objective is to remove heat units and foul air, through the supply of fresh air and its subsequent removal laden with its burden, in other words, the one operation is simply the reversal of the other. With the dwelling the air change is, you might say "driven" from the heat of the air itself, whereas in the subway powerful blowers and exhaust fans maintain the circulation, and resulting air change. Should heat be required during the colder periods it is only necessary to heat the incoming air to produce the desired temperature thus covering the two requirements in the one operation. Air then is a medium for the delivery or removal of heat, moisture, or impurities, and this property of our atmosphere is, I believe, the solution of the problem set forth by the subject of this article.

A personal tour can be made through the factories of many of the big industries of today and conditions as regarding heating and ventilating found good, or at least fair, until we come to the most important department of one of the leading basic industries, namely, the Machine Rooms of Paper Mills, and their general characteristics are to a great extent the same for almost any grade or volume of production. Conditions in these machine rooms we find in general not even fair, and in many, extremely discouraging. Intense heat, seemingly the more intense from extremely high humidity; in many cases the roof and walls saturated and dripping, and the air thick with vapor. The visitor, if he is not accustomed to paper machine rooms, generally loses interest about this time and beats a hasty retreat through a doorway in opposition to the outside air that is attempting to gain admission in much larger quantities than the size of the opening will permit—and I might say that it would not be the least improbable that increased capacity of exhaust fans were being planned for in this particular machine room to relieve the conditions that were causing loss in production on machines and general dissatisfaction among the men who must remain within the room.

The rush of air from the outside through door openings clearly indicates exhaust fan capacity as already over-sufficient and a condition of partial vacuum within the room. Exhaust fans are taking their supply direct from openings where ever existent in direct currents, and about and between these air currents a condition of partial vacuum may be said to exist, through which moisture laden air slowly rises to condense on unprotected surfaces above. In place of increased capacity of exhaust fans this room is demanding an increased supply of incoming air. The demand is there, but the supply is not, and we all know from our earliest experiences that an ideal condition is impossible unless the condition of supply and demand is balanced, and I may say that in the majority of cases, to this failure to supply an adequate volume of incoming air, can be attributed the disagreeable and deteriorating conditions found in many paper mill machine rooms that are described by the visitor as "Poorly Ventilated."

With conditions as above outlined a conclusion is at once arrived at, that the processes as carried on within these paper machine rooms must present features somewhat out of the ordinary from a heating and ventilating standpoint, and upon analyzing conditions as they do exist under normal operation, we find such a conclusion correct.

Let us take for example a two-machine room with a normal production of 100 tons per twenty-four hours —the sheet going to the dryers 33% dry and to the reels 95% dry. With this assumption we find that for each pound of production 1.95 lbs. of water is evaporated at the dryers and for each 100 tons of production per 24 hours, a total of 390,000 lbs. of water or 270 lbs. per minute is discharged from the dryer section and must be removed from the room in the form of saturated vapor; this in addition to the moisture rising from wire, flow-boxes, etc., that while low in quantity is also at low temperature and therefore practically at the dew point.

There will be in this two-machine room practically at the floor line approximately 15,000 square feet of dryer surface, under from eight to fifteen lbs. steam pressure, forming radiating surface sufficient inasfar as heat is concerned to heat a room of twice the volume under extreme low temperatures, and this radiating surface as mentioned above is practically at floor line.

There will be in this room approximately 23,000 square feet of floor surface — and a like amount of roof slab. There will be approximately 28,400 square feet of wall surface, and 701,500 cubic feet of volume. Of the 23,000 square feet of floor surface approximately 3,400 square feet may be open to basement, and of the 28,400 square feet of wall surface, approximately 3,600 square feet will be single thickness window glass, and 200 square feet openings into other rooms protected by fire doors, but open as a general rule.

With the foregoing conditions as existent within the room, the problem of Ventilation is before us and heating must also be resorted to, not for the purpose of raising the temperature at the floor level, but to hold the temperature beneath the roof slab, and about the supporting structure and walls, above the dew point of the moisture-laden air rising from the machine, and so saturated that but a few degrees difference in temperature will cause condensation. With low temperatures without, the underside of the roof slab, unless insulated, will present its entire surface as a condensor, and the supporting structure and walls will act in a similar manner.

We find, therefore, that to properly ventilate this machine room we must, First, remove the volume of moisture laden air rising from the machine and replace the volume removed from outside sources, and Second, insulate the under side of roof slab, roof structures and walls with air of a temperature that will be above its dew point.

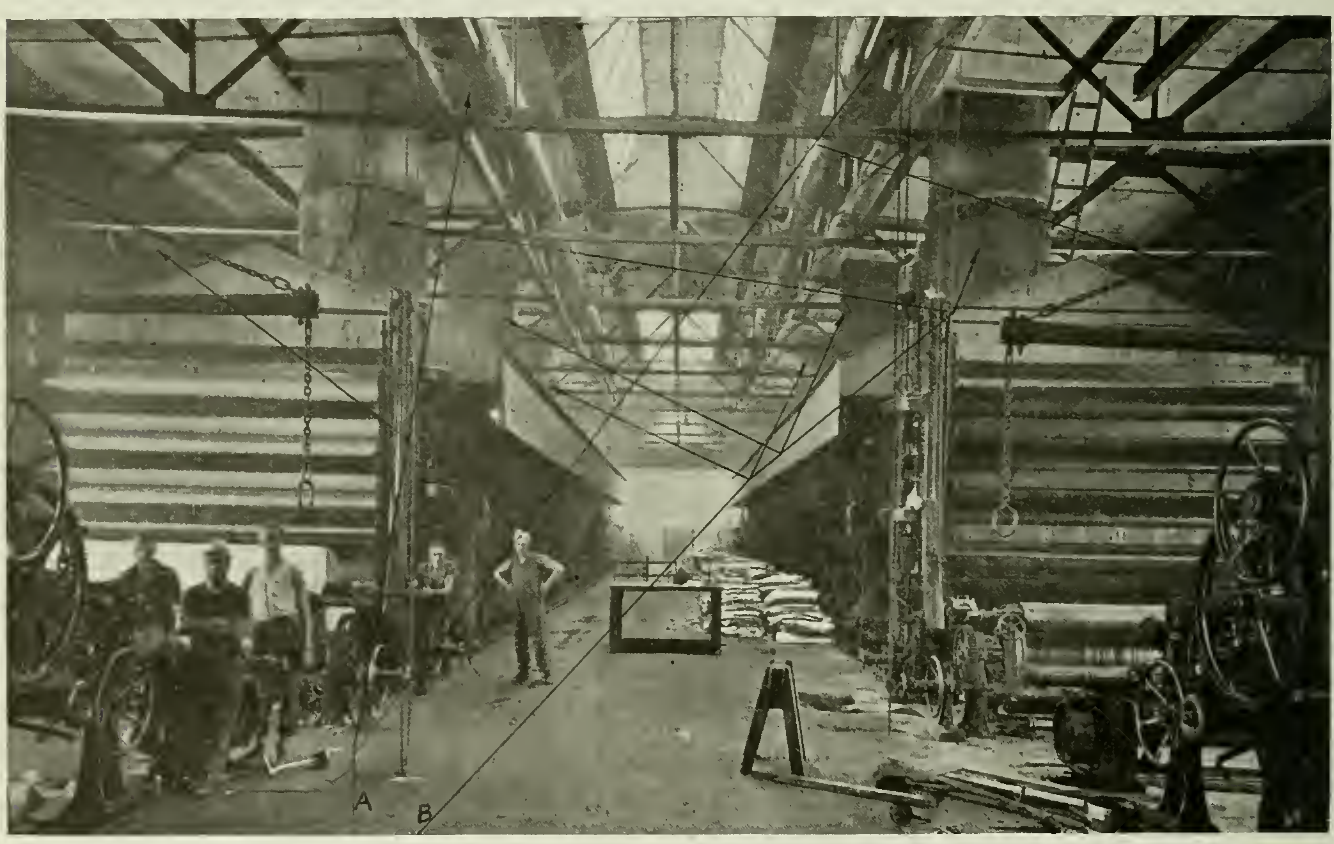

Fig. 1.—View from winder end of paper machine room. Lines A indicate hot air ducts carried on roof trusses. Lines B indicate exhaust uptakes for moist air, made telescoping so that lower half can be raised to allow crane to pass.

There are two methods of removal that can be utilized First, natural draft, and Second, positive exhaust. Experience has shown that while natural draft is serviceable for removal in machine rooms of low production, it has not the capacity for removal of the large volumes required under modern practice. We will, therefore, select the method of positive removal through exhaust fans. There are also two sources of supply for incoming or replacement air, in that it can enter through door, window or other specially designed openings, or can be delivered to room through a properly designed blower system.

For raising the temperature at underside of slab, roof structure and walls, there are two methods available, First, through direct radiation suspended from slab, and Second, through heating the air delivered to replace that discharged through removal.

In summarizing, there are then two systems outlined: First, the system of positive removal and replacement, with the replacement air heated to the most efficient temperature; and Second, a system of positive removal and either natural or positive replacement with direct radiation providing heat for insulation of roof slabs, roof structure and walls.

Natural replacement of air in the quantity required is not feasible, more especially so in locations of extremely low temperature. A machine room of dimensions as mentioned above should have normally a 7½ minute air change, or roughly 94,000 cubic feet of air delivered per minute, and openings in buildings to admit such a quantity would be to say the least undesirable, and further at low temperatures this volume of outside air would be extremely difficult to handle at floor level, even though sufficient direct radiation be installed under the roof to hold the temperature above the dew point. We are therefore brought to the conclusion that positive replacement with mechanical blowers should be the method selected.

With positive removal and replacement, we then have the principle of subway ventilation as previously brought to your attention. In other words, a sweeping out of the room through the medium of air and the accompanying removal of moisture content. As previously explained, however, sufficient heat units must be delivered to hold the temperature of the moisture laden air above the dew point, and we have only to decide whether the necessary heat units shall be delivered through the incoming air or from direct radiation.

A system of direct radiation beneath the roof, over an area of 23,000 square feet is an expensive installation and also difficult to maintain, due to moisture that must continuously surround this installation. Furthermore, this system can be utilized only to hold the temperature to the desired point; it can not in any way act in the removal of the many tons of water delivered from machines, for this work must be done through removal and replacement. Therefore, so long as this removal and replacement equipment must be installed, let us supply the heat required with the volume of replacement air, and dispense with a costly system of direct radiation.

In order that there may be no doubt that in so doing the right principles are being followed, we will compare initial costs and operating efficiency of a positive removal and replacement system against that of direct radiation.

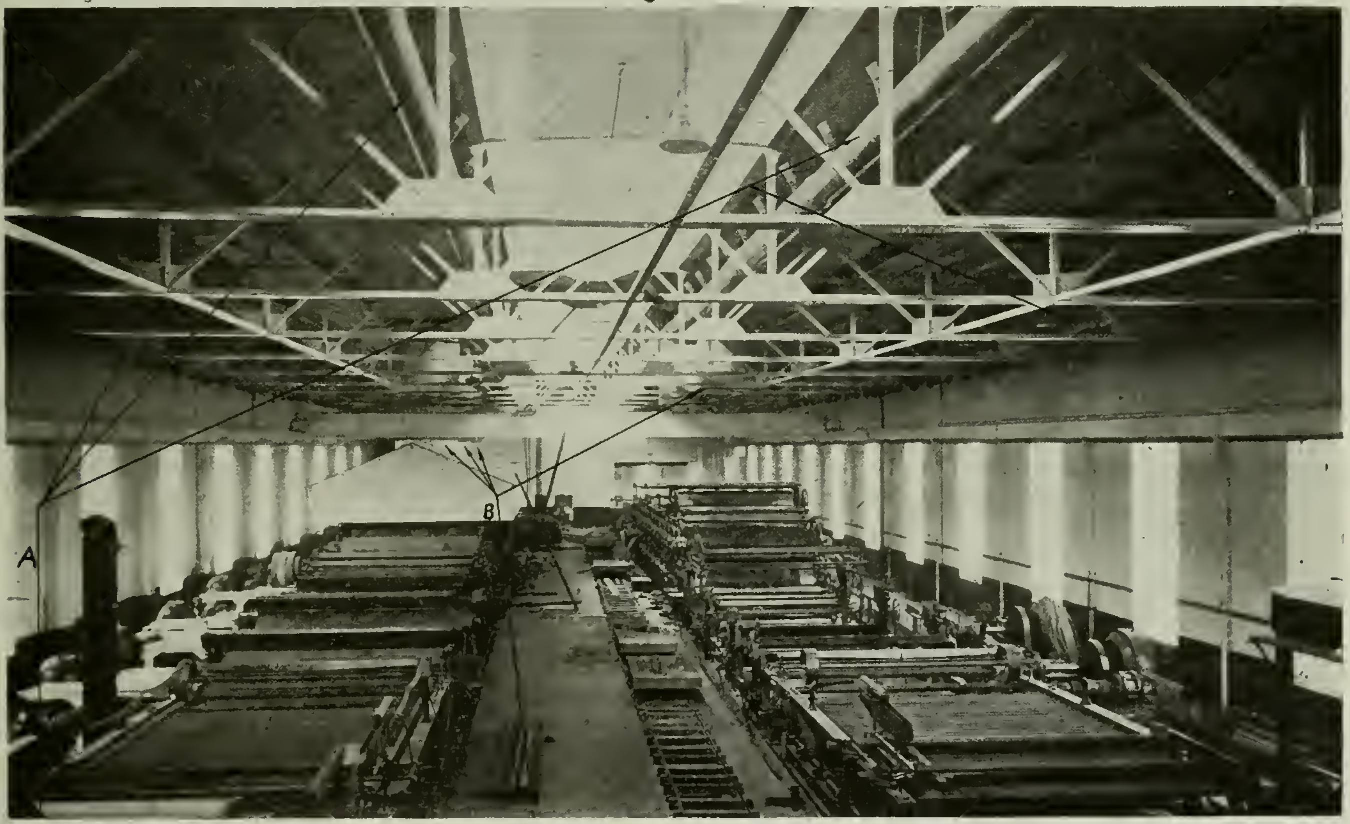

Fig. 2.—Paper machine room from wet end. Lines A show distribution headers for hot air. Lines B show exhaust uptakes from dryer hood. A glance at these two figures show clearly the distributing vents which direct the hot air both upward and downward. Note crane just over front end of dryer hood.

For the machine room as outlined, with a system of positive removal and replacement, approximately 94,000 cubic feet per minute of replacement air is demanded, equivalent to 7½ minute air change based on a 5 minute change at dryer sections and 10 minutes through balance of room. Heat required is to be introduced with this air, and with an outside temperature of 20 degrees below zero it has been found from actual experience that approximately 2,400,000 B. T. U's must be supplied with this incoming air, and this demand is met with incoming air at a temperature of 84 degrees F. Heater coils should be of a size to permit to 100 degrees F. but except through periods of extremely low temperature 84 degree F. continuous will give the desired results.

With outside temperature at 20 degrees below zero and incoming air at 84 degrees, approximately 9.900 lbs of steam is demanded. Nine hundred lbs. for engine and nine thousand for heater coils. Ninety per cent of engine steam, however, is returned to coils so that net demand is 9,090 lbs. per hour, and this includes heat loss through roof, walls, etc.; for an outside temperature of zero the net demand would approximate 8,200 lbs. and for 60 degrees—960 lbs. per hour, equivalent to 300, 273, and 32 Boiler H. P. respectively.

A system of total capacity of 94,000 cubic feet, with distribution system, steam and condensate connections, will cost today about $22,000 installed; this cost does not include exhaust fans, hood or up-takes as this latter installation is required irrespective of the method of supplying heat. For the room in question, a figure of $220 per daily ton can be used for estimating purposes. If hoods, exhaust fans, up-takes, etc. are included, this figure should be increased to $320 per daily ton.

To compare a system of radiation we must figure losses through surfaces, and then give an equivalent number of infiltrations to at least approach the air change that a fan system would give. These figures will show a total expenditure of 11,200,000 B.T.U's on 250 B.T.U's per square foot of surface per hour, would show a requirement of about 44,000 square feet of radiation, which, based on one-quarter of a lb. per square foot, would be equivalent to approximately 11,000 lbs. of steam per hour, or but a slightly higher hourly demand than that for the positive system. Losses through roof, however, with a system of direct radiation would increase this steam demand 100%, due to the much higher degree of heat under the roof. With the positive system air entering at 84 degrees would be about 80 degrees under the roof, or, with outside air at 20 degrees below zero, a range of 100 degrees. With direct radiation close under the slab, the temperature will be very close to 180 degrees, of a range of 200 degrees. Loss of B.T.U's through any surface is proportional to the difference in temperature between the two sides, and loss through direct radiation would, therefore, be 200 per cent of loss with positive system.

Approximately 16,000 lbs. of steam would be used per hour with a direct radiation system, under conditions as stated for a net demand of 9,000 lbs. for the positive system, and would be equivalent to approximately 533 Boiler H. P. vs. 300.

A direct radiation system as described above would cost today about $45,000 installed, or $450 per daily ton, over 100% greater than cost of a positive system.

My objective in the preceding paragraphs has been to take you step by step through the different phases of the subject in order that you may thoroughly understand the system that I believe to be practically and also theoretically the most efficient, and further on two installations that I have been directly interested in it can be proven, even with extremely low outside temperatures; that the interior of a machine room with normal production can be kept at an efficient working temperature and with it a degree of humidity that will allow glasses to be worn on any part of the floor without moisture condensing thereon, and this I believe to be a very fair test especially when entering a machine room.

We now come to the method of removal of air and also of replacement. There have been among certain mill owners serious objections to hoods over dryer sections of paper machines. These objections no doubt, are due to interference from hoods and uptakes with machine, crane, etc., but it can be stated that with very few exceptions those mills that commenced operation without a hood were so equipped within the first year after commencement and this later installation was made with much inconvenience and additional expense. I believe, therefore, that the industry in general is convinced that a hood of proper design is desirable, and I can further state that from a ventilation standpoint it is absolutely necessary.

For a two-machine mill, uptakes from hoods may be either horizontal through the wall or vertical through the roof. For a machine room housing more than two machines vertical uptakes must be resorted to, and even with a two-machine mill the vertical uptakes are preferable in that the discharge is direct and cost of installation less. There is no difficulty in providing a passage way for the crane, and the hood can be so designed that no interference is caused to any part of the highest speed machines.

For the two machine room in question three uptakes from each hood are recommended, of approximately 6′ diameter each. In four of these uptakes exhaust fans should be installed and in the two uptakes at the dry end, one for each machine, either exhaust fans can be installed or this vent designed for natural draft. I have been interested in numerous installations where natural draft was used in this vent, and operation was perfect.

The fans for replacement of air should be of standard equipment selected in the case of the room in question, for approximately 95,000′ per minute delivered for the machine room only. Additional capacity must be allowed for basement or any other departments that are heated from this unit. It is customary to allow full intake from outside air, but a damper installed in the fresh air casing permits recirculation with extremely low outside temperatures, thus decreasing steam demand. This recirculation, however, is limited and is not allowable for air direct from the room in question, in that the purpose of this system is thus defeated.

With a two machine unit including machine room, beater room and finishing room, it is advisable to install two sets of replacement fans, one for each machine, rather than one unit for the entire requirement. Each fan can be designed to supply heating demand for its proportion of beater and finishing room, as well as one half machine room requirements, but it is far preferable not to extend demand beyond machine and finishing rooms, as these fans are primarily for the machine room, and if distribution piping therefrom is extended over a large area, the tendency will be to deprive the machine room of its proper supply.

The replacement air can be distributed at any point of machine room. The proper distribution, however, is in the roof truss structure near the underside of roof slab. For a two machine room one line of distribution at the wall on either side, with two center lines, one on either side of the centre of the room is recommended. All lines of distribution shall have openings directed both toward the roof and vertically downward, designed to distribute approximately one-third of the volume to the underside of slab and two-thirds downwards the floor. It has been stated that approximately 94,000 cu. ft. of air per minute is required for this machine room and exhaust fans four or six in number should be installed for a total of not more than 85,000 ft. thus producing a slight pressure within the room, the heated air being forced toward the floor level through pressure from the supply above, giving an even distribution downward, thus meeting the volume of moist air rising from the lower level, and sweeping it out under the hood and through the uptakes, together with the large volume of saturated air rising direct from the machine itself. This condition of slight pressure is a most important feature, in that openings in floors or walls cannot in any way cause interference with the proper operation of ventilating equipment, whereas, should this condition of pressure be changed to one of partial vacuum, through the capacity of the exhaust fans being greater than the delivery fans, a rush of air through any opening will result. This inrushing air during the winter season will be of extremely low temperature if from the outside, and if from the basement, will be laden with moisture in addition to its low temperature. Statements have a number of times been made to the effect that openings should not be left in the floor on account of interference with ventilation of the room. The actual cause of interference, however, was an insufficient supply of air to replace that demanded by the exhaust fans, and as previously stated this lack of sufficient replacement volume is the cause of a great percentage of the failures in machine room ventilating systems.

Should conditions be not as they should be within the machine room the immediate conclusion of course is that the moisture and heat are not being removed and in order to relieve this condition exhaust fans are speeded up. There will be a partial vacuum throughout the room, moisture arising from lower level, will ascend meeting roof slab, supports, and walls where condensation takes places with the resulting drip. Steam will curl out from under the hood due to insufficient circulation, and the room can be said to be in a very poor condition, from a ventilation standpoint.

It may be that exhaust fans are operating under speed. This can be easily ascertained by speeding them up and observing if improved conditions result, but in the majority of cases the fault lies entirely with the incoming supply being insufficient to replace the volume demanded by exhaust equipment.

With a system installed as outlined, of positive blowers equipped with steam coils for heating the incoming air; with a properly designed distribution system under roof slab,—with hood and uptakes equipped with exhaust fans operating at a capacity slightly under that of the incoming fans, a machine room is equipped with an installation that will properly ventilate the room, providing its operation is efficiently handled.

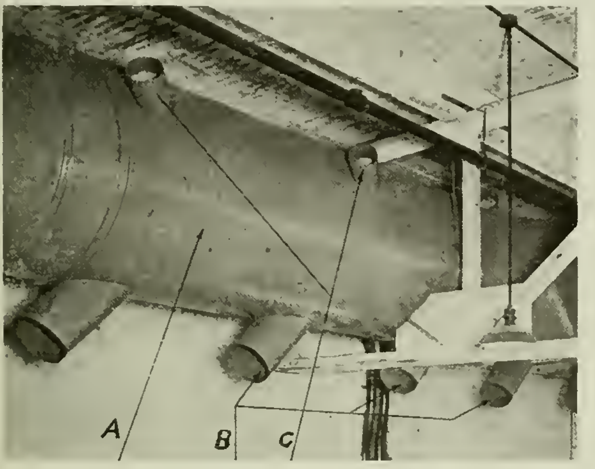

Fig. 3.—View of distribution header A, showing also vents B discharging about 2-3 of the warm air downwards to the room, and vents C discharging about 1-3 of the warm air upwards to the roof.

As previously stated the action of this system of ventilation is to sweep out the room, freeing it of all moisture and excess heat. The moisture, it must be remembered, requires removal irrespective of the degree of outside temperature, therefore the air change within the room should be kept fairly constant summer and winter. For winter days of extremely low temperature, however, heat units delivered with the incoming air must be greatly in excess over that for a summer day where outside temperatures are much higher. The regulation of this system will therefore depend to a great extent on steam supply to heating coils the fan speeds requiring very little attention. The regulation of steam to coils can be quickly mastered by the Engineer in Charge through actual conditions within the room, as providing air change is constant and condensation or vapor show steam supply insufficient, and if drybulb thermometer shows too high temperature, incoming air is being overheated.

A word might be said here as to the effect of the type of construction of the machine room on its ventilating properties with the system under discussion. It can be readily be seen that with a low outside temperature, the incoming air must be heated to prevent condensation, and further, efficiency of the system must depend on the retention of this heat within the room, therefore the lower the conductivity of the enveloping structure, the greater the retention of heat units, and what is more to the point, coal in the bunker. Paper mills of any size are now built of fire-proof construction, employing concrete, steel, brick or tile, except as regards roofing material,where wood has been the standard material to a great extent, and through a wooden roof the largest number of heat units are lost. For durability, fire-proofing qualities and non-conductivity Gypsum roofs are fast coming into use, and I may refer you to an article in "The Pulp and Paper Magazine of Canada" Volume 18 for July 8th, 1920, that describes the general qualifications of this type of construction for machine room roofs, it having a conductivity in comparison with wood roof of 3.21 to 4.61, and of concrete 3.21 to 13.8.

For proper lighting effect, especially for a room containing two or more machines, it is without doubt necessary to install sky lights. This sky-light area, however should be held to a minimum due to the high conductivity of glass and resulting heat losses through it. Glass areas in the walls should be designed with a view of admitting sufficient light but no more. In a large number of paper machine rooms, window glass covers a large area and this large area is in inverse ratio to the size of the coal pile at the end of the winter season. In other words protect the interior of the machine room from outside temperatures to as great an extent as compatible with cost of construction. As an example, an air space can be left in brick walls with little extra expense, whereas with a concrete wall an air space involves an expenditure that is prohibitive, but wherever air spaces can be left, insulating qualities are greatly improved.

In summarizing, the more insulated the building structure itself is against outside temperatures, the less steam is required for ventilating system, and the lower the cost of operation, and in locations where extreme low temperatures occur, and there we find paper mills of the greatest production, this heat unit retention is of the greatest importance.

There is one other condition that has a direct bearing on a system of ventilation such as described in this article, namely, a system of blowing heated air directly within the dryer section. There are a number of such systems on the market and they are an aid to increased production, in that steam within the dryer pockets is absorbed together with moisture from the sheet.

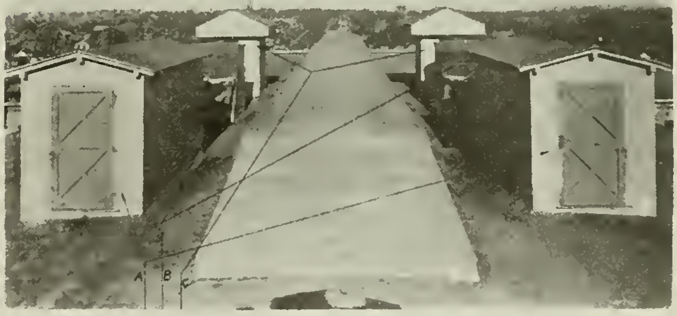

Fig. 4.—View of roof showing motor houses A, Fan uptakes B, Gravity stacks C.

These systems have their value in the production of heavy sheets, such as board, pulp or wrapping, as the capacity of the machine is generally dependent on drying capacity, and any system that will give increased drying effect will thus increase production. It can readily be seen that the volume of air distributed by such a system can be deducted from volume required for machine room ventilation, in that volume of replacement air is simply a total of that distributed through a single or multiple system.

The description that has been given including general details, is that of the system I believe the most efficient. Slight changes, will be required for different mills, due to type of construction, conditions of exposure, space available for fans, and other general characteristics that differ slightly in different locations. For the best results, the installations should be designed individually for location selected, and if the system is installed and operated properly, condensation and varying temperatures will disappear and in their place a clear atmosphere with even temperatures at all seasons will appear; and such a condition is the aim of the operator; for the men whose working hours are spent at the machines; for the building that deteriorates rapidly when saturated with moisture; and last but not least, for increased production itself.

(Discussion to follow.)

The Paper Box Industry is Full of Hope

The following paper was prepared by Mr. W. P. Bennett, of the Rudd Paper Box Co., Limited, Toronto, and read in his absence by Mr. B. Sproule, of Collett-Sproule, Limited, at a luncheon of the Toronto Carton Club held at the King Edward Hotel on February 8th.

What can we do to make the best of and improve present quiet conditions in the Paper Box Industry—from the standpoint of handling labor?

Shall we consider reducing the wages of our employees to help improve present quiet conditions?

No!

A few months ago, at a meeting of the Toronto Carton Club, we discussed at some length, the difficulty of obtaining workers for our industry and at that time we came to the conclusion that we should grasp the opportunity then presented, of increasing wages to the extent of placing us on at least the same basis as other lines of manufacturing, who were employing help of a similar type to ours. This would enable us not only to hold the employees whom we had trained to our business, but at the same time attract a desirable type of workers to the industry. During the past year or more, we have been fortunate in accomplishing our aims—our industry is flourishing, our employees are well paid, and it would therefore appear regrettable for us to use the temporary slackness of our industry as an excuse for reducing the wages of our employees and thus destroy in a moment the good accomplished in the past.

Are we not taking too seriously to-day's temporary condition and perhaps overlooking the thought that our problems should be discussed and a solution sought, not from the narrow angle of to-day, but from the broader viewpoint of to-morrow, next month, the years to come? Is there a member here who will deny the thought that we are living in a country which cannot be held back from rapid development for many years to come? We are guiding an industry which at the present time is hardly more than in its infancy, so if we are to "Advance" as our Slogan suggests, our thought should be:—an we by study and co-operation so increase the efficiency of our various plants that in addition to our receiving a fair return for our investment, we may consider the possibility of paying our workers **more** in the years to come, rather than **less**.

Speaking particularly of to-day and thinking of the prosperity we have all enjoyed during the last few years, would it not appear to be good judgment on our part to keep our loyal workers employed even if only on shorter hours until our industry resumes its natural stride?

The time is, of course, most opportune for a weeding out process, i.e. the elimination from our industry of such workers who have not proven themselves capable and who serve as a handicap to the loyal employees who are entitled to a continuance of their present wage. If we are able to maintain our present wage, at a time when the reverse thought is in the air, I am confident that we will be more than repaid by a speeding up in production that will surprise us.

May I further trespass upon your time by expressing my opinion regarding our general attitude as an industry in its relations to the various trades with whom we are dealing and hope to deal?

We are undoubtedly entering into a new era, one of the features of which will be keen competition, not only among various nations for the world markets but of necessity within each group of industries. Are we ready? Let us take an inventory of our condition.

How many of us have read the book to which many of you contributed—"The Paper Box Factory Efficiency and Production?" It is full of meat. How many of us are studying our costs? Have you a cost system? Are you using it? Are we watching our stocks of raw materials to reduce them to the minimum?

Are we scrutanizing our credits? Are our salesmen—salesmen, or order takers and price cutters?

Let us each answer these questions to ourselves, strengthen our position and sell our product on as close a margin as is consistent with good workmanship and prompt service.

We are in this fortunate position: A large proportion of our goods is of such a bulky nature that we are not seriously harassed by competition from other countries. Raw materials are lower, and may be further reduced in price which will aid in bringing back many lines of boxes, which, during the past few years have been abandoned, new industries are starting every day and there are many new and untried uses for the paper package which our ingenuity will discover. None of us has yet realized the advertising value of paper boxes which, when realized, will further increase the popularity of the paper package.

Instead, therefore, of dwelling too much on the petty problems of to-day, let us rather look forward with a firm confidence to the future which is full of hope and prosperity for our industry.

HANDLING BATES' FELTS IN BRITISH COLUMBIA.

The well known Bates' Press Felts manufactured by Bates & Innes Ltd., Carleton Place, Ont., are now being handled in British Columbia by the Jamieson Engineering Co., 103 London Bldg., Vancouver. This Company is handling a number of other lines of Paper Mill supplies.

The chief executives of the firm are Mr. E. A. Jamieson, C.E., and Mr. J. A. Walker, B.A.S.C., both of whom have had considerable experience in survey and power development work as well as Paper Mill engineering in this Province.

Technical Section Meeting

An account of the Annual Meeting of the Technical Section of the Canadian Pulp and Paper Association, held in the Ball Room, Ritz-Carlton Hotel, Montreal, P.Q., Wednesday, January 19 and 20, 1921.

Mr. L. H. Shipman, chairman, presiding.

Mr. A. L. Dawe, Secretary.

Chairman L. H. Shipman called the meeting to order with a few brief remarks:

I will just say this before leaving office that I want to express my appreciation—and it is real—for the splendid co-operation that I have received from the executive council of the Technical Section this year, and particularly do I want to express appreciation to the Secretary, Mr. Dawe for his splendid work, and for the splendid help he has given me in guiding me in the various duties of the office during the past year.

REPORTS OF COMMITTEES.

It was voted that the minutes of the previous meeting be accepted as read, motion by Mr. Carruthers, seconded by Mr. Hovey. The full text of committee reports will be found in the Pulp and Paper Magazine for January 20, 1921.

The report of the Committee on Programme was taken as printed.

Committee on Education.

This report is found on page 81 for Jan. 20.

One of our great efforts during the past few months, has been to get some concrete examples of the work before you, and Mr. Kellogg has this morning produced the first volume of the text books. It came off the press yesterday afternoon at four o'clock, so you will see it is about the latest thing in pulp and paper technology on the market. In fact, it is not on sale yet. This volume contains Arithmetic, Elementary Applied Mathematics, How to Read Drawings and Elements of Physics. Volume 2 will treat of Mechanics and Hydraulics, Electricity and Chemistry; Volume 3 will cover the Manufacture of Pulp; Volumes 4 and 5 the Manufacture of Paper, etc.

One of the main activities of the Committee in the future will be to get that into the hands of the consumers. We are providing the horse with water, and the next line of action will be to try and get the horse to drink it, and I do think it will be very difficult.

Another thing not alluded to in the report of the Committee, is the report on occupational work in the industry, and the means to get the educational authorities in touch with the needs of the various occupational branches. This report was written by Mr. J. C. Wright, who is the Assistant Director of Industrial Education of the Federal Board of Vocational Education of the United States. It is very complete and will be issued in pamphlet form. It is now running in serial form in the Paper Trade Journal, and is now available to the readers of that journal. It will take between two and three months to run it serially, and we will get it in pamphlet form as soon as possible after that.

There are the only two new points. I think we ought to emphasize the work amongst the students. During the past summer there were some sixty students from the various universities taken on at the various mills. That is an advance of one hundred per cent over the year previous, when we reported thirty students. This year we have had sixty students in the various mills, and they have rendered an extremely good account of themselves.

Last year we found that seventy-five per cent would have been welcomed back in the mills again — from the report we had from the mills, and I think the thanks of us in the industry should go to the universities and to Mr. Dawe for the work that has been done in this matter.

Fourteen of these students submitted essays in the competition. The result of that competition will be announced very soon.

Abstracts and Publications.

Mr. J. N. Stephenson referred to the report as printed, and added:

Further than that I have nothing to say beyond thanking the members of the section, on behalf of the Committee, for the assistance they have given us in carrying on the work, and we would like to have suggestions from the members as to how this service can be improved.

Mr. Ross Campbell: It may be of interest to the members to sketch briefly what we are planning to do with all the abstracts across the line.

We have felt for sometime that one of the weaknesses in our abstract work was the fact that these appear from time to time in the journals, and unless they are indexed by the librarian, or by someone who is responsible for them, after a few months their location is forgotten, and we propose down there to make them public once or twice or three times a year, put these abstracts altogether in one place and then have them properly indexed and cross indexed, so that they could be filed for reference, and held as a permanent reference work. That is what we are planning to do now.

The abstracts will, as formerly, appear in several of the paper journals, but they will also be collected and appear, properly indexed, in the T. A. P. P. I. proceedings.

Mechanical Standards.

The Chairman: Speaking generally, the standing committees have done very good work during the year, but specifically there is one committee that I feel has done most excellent work, and I take great pleasure in calling upon Mr. John Stadler to tell us of that work, in his report on the activities of the Committee on Mechanical Standards.

Mr. Stadler: Mr. Chairman and gentlemen.—I don't think the Chairman is justified in making any such reference to the Committee on Mechanical Standards.

Furthermore, it must not be over-looked that the main Association has appropriated certain funds for doing the work, and we have availed ourselves of this appropriation, consequently, we have been in a position to call in a little more outside help to have work done, which we considered would be of general interest to some branches of the industry.

You will find the report of the Committee on Mechanical Standards in printed form. I will not read it because you will get more from it by reading it at your leisure.

There is, however, one think I want to point out to you, and that is that the Committee has changed entirely its attitude in regard to accomplishing anything by the plan as originally outlined.

You will recollect that previous to last year's meeting, a month before—we sent out a questionnaire. This questionnaire was sent out to all members of the Association and to all the mills. Out of one hundred and forty-seven questionnaires sent out, your Committee reports the receipt of questionnaires to the total number of ten. Out of a total number of ten received, only five of them have information that we considered would be or could be used by us for comparative purposes. However, if you consider that the number came down to only five, and if you look at the total number of mills represented in the Association, it looked to us as if the information tabulated on such a basis would be very much one-sided, and, therefore, we discarded entirely the information thus obtained, and only made reference in our report to certain facts.

This questionnaire revealed one of two things, either that the people had not as yet given sufficient attention to mechanical details around the plant, or they did not want to give the information. I am rather inclined to believe that the first is the case, that they have not given sufficient attention to details.

We could not do one thing we had set out to do, and that has been the study of resistance of paper stock in pipes. We have found a method of making it, but we reserved this for further investigation, and as we say in the last part of our report, we expect to publish that in the Pulp and Paper Magazine as soon as the data is available, which we hope will be sometime during the year. I really believe that the sooner we get some information in regard to resistance of paper stock in piping, the better it will be because at the present time there is so much guess work connected with it, and quite often you want to do certain work, and when you put this equipment in operation, you find you have entirely under-estimated the resistance of the pipe, and consequently the horse-power, and so we will try and get this finished as soon as possible.

As I told you a number of questionnaires were returned, but the number which could be of any use was very small. I want to add that I do not wish you to take this as a criticism: I just want to bring before you the facts, and ask you to bear in mind that probably some other day we will get out an additional questionnaire, upon which probably we will not ask so many questions, and we hope, when this questionnaire is sent out, you will reply to it whichever way you think. Do not hesitate to express your opinions on such things. It is the opinions that count to a very large extent in assisting us to formulate our committee reports.

I want to say that it was not our intention to go, in this work, into anything of a highly scientific or technical nature. Our whole aim was to work out some practical data for scientific investigation.

Mr. Stephenson: I move that the Technical Section accept this report and extend the thanks of the Section to the members of the Committee for their excellent work, with the hope that the members of the Section will co-operate more promptly and more fully with the committee in getting the rest of the program finished which they now have before them.

The motion was carried.

The Chairman: Your Chairman feels just exactly as he stated in calling for the report of the Committee. This Committee has been, as some of us at least know, a hard-working committee. They have a long job ahead of them and they have done a great deal of work already, and the final result will bear out what I say — I am very sure of that, and I simply speak in this way to emphasize to some of you who perhaps are not quite familiar with what this committee is doing, that you keep in touch with them and give them your help.

This is one of the most important committees we have, and luckily we have the men on it who are doing the work.

Moisture in Pulp.

Mr. Slack: Mr. Chairman, I wish to say, in addition to the printed report that your committee have in the past brought up a standard for testing moisture in wet pulp and at the past two meetings, I have brought up the question of how the dry pulp is tested. There are three well-known methods of testing dry pulp, that of testing by the strip, by the disk and with the wedge method. I feel that the members of the Committee are somewhat handicapped because in each mill they are using mostly different methods, and I feel that the only way to get at a standard in testing this dry pulp would be to arrange with the American committee and also with the English committee and the Scandinavian committee in order to arrive at some basis by which we could determine which would be the best method, so that we could have a standard method of testing dry pulp, but at the present time, different methods are used by the different mills.

I have visited mills in the States, and one mill would be using the strip method, and one the disc method, and perhaps the third one would be using the wedge method, and I feel we ought to appoint a committee here to deal with the American committee in trying to secure a standard method for testing moisture in pulp.

Mr. Crossley: I move that the committee's report be accepted and the thanks of the Technical Section be tendered for their excellent work, with mention of the fact that their duties include an arrangement with the American Coommittee.

The motion was carried.

Mr. Dawe: The Technical Association notified us in July that they had appointed a committee, headed by Mr. Tucker, with the assistance of Mr. Herbert Spear, and Mr. George C. Spence, to act on a joint committee with the two Associations on the question of testing moisture in pulp. Mr. Slack has been in touch with the committee, and any work that has been done, I take it, is the result of negotiations between them.

Mr. Crossley: I would like to draw attention to a form of pulp which has been giving trouble in samples. That is very wet pulp. In the samples of pulp shipped a little while ago, we had but little more then thirty per cent of air-dried pulp. It was poplar, and one of the most difficult forms of pulp I have ever tried to sample. You could not put any pressure on it, without having the water drip right out of it. I don't know just what could be done, but we would have to find some way of drying out the pulp, and that might be put in a class by itself. I think pulp under thirty-five per cent would require special treatment.

Statistics.

The Secretary: Mr. Burns and I had a talk about the work of this Committee last week. We feel that the original idea of having a Committee on Statistics was in the days when we had no machinery for distributing the facts about the industry. Since then we have developed a Publicity Bureau, which is keeping the members very well posted on any matters regarding the data, etc., and, therefore, we ask that we be relieved of any further work, as we feel that we are maintaining a useless branch at the present time, because the very work that we started out to do, is being carried out in a far better way by the Publicity Bureau of the Association.

Mr. Stephenson: Mr. Chairman, before passing this step entirely, I would like to remark that this Committee, while it was in action, was very active, and for the past couple of years previous to the present year, when this work was taken over by the Association office, we were treated to a very full report, and some excellent work was done in collecting data and preparing curves, and a great deal of work along that line, which should not be passed without the thanks of the Section and I would like to make such a motion.

Carried.

(Discussions of papers read will follow in next issue).

SPANISH RIVER MILLS ANNUAL BANQUET.

A feature unique perhaps in Canadian industry, but which has become a regular institution with the Spanish River Pulp & Paper Mills, is the president's banquet, held once a year, to which members of the executive and heads of the various departments of the mills at Sault Ste. Marie, Espanola and Sturgeon Falls, are invited. In addition to providing a pleasant social evening for those in responsible positions with the company, the privilege is also presented for the interchange of valuable ideas, and the outlining of the company's activities and prospects for the coming year. The management claim that this annual gathering has been one of the most effective means in maintaining the very favorable relations that exist between the officers and workers. By this means a satisfactory understanding is arrived at between the department heads and the executive which, in turn, is extended to the individual worker.

The fifth annual banquet was held in Sault Ste. Marie last month and the guest list was extended to include heads of neighboring industrial concerns, prominent business men of the district, and in addition, Senator Gideon Robertson, Minister of Labor, and Hon. Beniah Bowman. Addresses were delivered by President G. H. Mead of the Spanish River Company, the government ministers, and by speakers from each of the company's plants, who were chosen by lot as special representatives.

President Mead spoke of the very satisfactory relations that had been maintained between workers and employers throughout the year. He said that the annual gathering was held for the purpose of bringing forth the company's policies and ideals for the year's works, and to bring about a closer association with the men on whom the company depended for its operation. It was the company's wish, he said, to instil into each mind that an endeavor was being continually put forth to give honest return for every dollar made. Production of the mills, he continued, as 625 tons of newsprint, 500 tons of ground wood, 230 tons of sulphite and 40 tons of board, daily, which in all represented 20 per cent. of Canada's production and 8 per cent of the production of the American continent.

Company's Development.

Some interesting light was thrown upon the company's development by Col. Thomas Gibson, the company's legal adviser. While the company's past had been a troublesome one, he stated, it had been an honored one, and the organization had grown into one of the largest of the Dominion. In 1894 the first ground wood mill was built, and in 1901 the first sulphite mill at the Sault, with a capacity of 8 tons a day. In 1913 the three companies at the Sault, Espanola and Sturgeon Falls were united.

Hon. Gideon Robertson commented favorably upon the spirit of harmony and co-operation evident within the ranks of the company's workers. He endeavored to impress upon the gathering the interdependence of every class of society and capital. This was the very basis of modern society, he declared. Speaking of the progress that had been made by the government in providing for labor he said that the one million dollars a year for ten years had been set aside for technical education because workingmen had come to realize that by becoming skilled workmen they could give better service to their employers and to the nation. There were now eight thousand teachers giving technical courses, and 60,282 workmen were in attendance.

In connection with the establishment of a plant council, which it is understood the management of the company have in view in addition to their other advanced benefit schemes for workers, the Minister of Labor stated that the value of such a council was exemplified by the results of the coming together of the railway officials and their employees, resulting in six men being appointed to represent each party at a hearing of the matters in dispute.

Hon. Beniah Bowman emphasized the need of forest conservation to offset the depredations upon the forest resources of the province by the constantly expanding pulp and paper industry. He called attention to the work of reforestation now being carried on by the government in Norfolk county, where some 1,600 acres of waste land had been replanted with maple trees.

PORTLAND "ARGUS" DEAD AT 118 YEARS.

Portland, Maine, January 24. — The "Daily Eastern Argus", the oldest daily newspaper in Maine, passed out of existence with to-day's issue. It will be succeeded to-morrow by the "Portland Herald", published in the same plant, but by a new company, in which these financially interested in the Argus have been reinforced by a number of local business men. The Argus has had 118 years of uninterrupted existence.

The Great War Veterans Association of Sault St. Marie at a recent meeting passed a resolution upholding the application of the Spanish River Pulp and Paper Mills Co. Ltd., for more land from the Provincial Department of Lands and Forests. The resolution sets forth that the company had been very prominent in building up the district, including Espanola and Sturgeon Falls, and had been considerate of returned men. Also the company had been one of the fairest in dealing with its employees.

"If you think you won't have an accident, ask the man who had one, then think safety," says the Safety League.

RAILWAYS WANT 24 TON MINIMUM ON NEWSPRINT.

The Annual Meeting of Pulp and Paper Traffic League was held at the Windsor Hotel, Montreal, January 27 and 28, 1921. An enjoyable feature of the meeting was the luncheon on the 27th, when the Canadian Pulp and Paper Association entertained the League at the Engineers' Club.

President Hurlbut called the meeting to order at 11.15 a.m., January 27th. This session was occupied largely with routine business.

At the afternoon session the question of railway wage scales and working agreements and their effect on freight rates was discussed. It was pointed out that this subject was being actively agitated throughout both Canada and the United States at the present time. The Executive Committee was directed to keep in touch with it and take any action it might deem necessary properly to protect the interest of the pulp and paper trade.

The effect of the McCaul-Dinsmore decision upon the adjustment of claims in Canada was brought up and statement made that it was understood the Canadian Manufacturers Association had the matter in hand.

The remainder of the afternoon session was devoted to a very comprehensive review by President Hurlbut of the conditions which had led up to the filing of the following important cases involving rates on paper into the West and Southwest:

Minnesota and Ontario Paper Co., et al., vs Northern Pacific Ry., et al, Docket No. 11950.

Lake Superior Paper Co., Ltd., et all, vs Ahnapee and Western Ry., et al, Docket No. 11981.

Wisconsin Traffic Association vs Chicago and North Western Ry., et al, Docket No. 12108.

At the opening of the Friday morning session, President Hurlbut summarized briefly the complete review of the Western rate situation which he had placed before the members on Thursday afternoon. He pointed out that as a result of these cases, there will probably be three sets, or scales, of rates established on paper in the West. In fact, there is a tentative understanding between several parties to the cases that this plan will be adopted and that newsprint paper will be accorded the lowest scale of rates, printing and wrapping paper, an intermediate scale, and writing and toilet paper will be subject to the highest scale of rates. The questions of descriptions, minimum weights and mixtures have also been discussed by Mr. Hurlbut with representatives of the initial Wisconsin lines, and some features tentatively agreed upon.

The Western roads purpose proposing an increase in the minimum weight on newsprint to 48,000 lbs., in connection with the revision of Western rates. This was discussed at the Friday morning session and many objections were expressed. The conclusion was reached to defer final action until a meeting of the League (or of the members who are going to intervene in these Western cases) which will probably be held a week or ten days prior to the hearing. In the meantime, members who are interested in the question should make an investigation to determine what increase, if any, they can consistently agree to.

As a result of the full discussion of the Western rate situation, it was understood each member present would give careful consideration to participating, by intervention, in one or more of the formal complaints.

The question of valuation clauses in various Western lines' tariffs was raised, but it was pointed out that this would be definitely settled by the Commission's decision in the Western paper rate cases.

Just prior to adjournment of the morning session, there was a frank and full discussion of the apparent inactivity of the League during the past year. The reasons for this were quite thoroughly understood by most of the members, but it was agreed that conditions are now such that there should be greater activity on the part of the League and more co-operation between the members through the channels provided for by the League. In connection with this increased activity on the part of the League, it was pointed out that it would be most desirable to increase the membership, and President Hurlbut appointed each member of the League a committee of one to do his utmost toward bringing new members into the organization during 1921.

At the afternoon session there was brought up for consideration, a letter from Mr. R. S. Kellogg, Secretary of the Newsprint Service Bureau, inquiring if the present was an opportune time to reissue his newsprint freight rate book. It was the consensus of opinion that conditions were such as to make this inadvisable at the present time, and it was understood Mr. Campbell would so inform Mr. Kellogg and give him the detailed reasons for this conclusion.

The question of claims for damage to paper was discussed quite fully. Special mention was made of the large number of cars with leaky roofs now in service. The necessity for more rigid inspection was emphasized, and it was the consensus of opinion that each member should make it clear to the railroads from which his mills receive equipment, that under present conditions the paper mills feel justified in insisting upon equipment which is actually "fit for paper."

In connection with a discussion of the Canadian Demurrage Rules. it was concluded it would not be advisable to agitate the question of having the rules brought more nearly into line with those in effect in the United States.

The Secretary was directed to ascertain and inform the members by circular letter, the status of the proposed loading rules which were the subject of several conferences during 1920, with representatives of the railway inspection bureau.

After careful consideration of the manifest charge now being assessed by Canadian roads, the following was adopted, and the Secretary was directed to present this protest to the Board of Railway Commissioners for Canada and to the Canadian roads:

"Unanimously resolved and adopted that the Pulp and Paper Traffic League protest to the Canadian carriers and to the Canadian Railway Commission, the petty and annoying charge of 11c per shipment now being assessed by the Canadian roads at the Border for preparing Customs manifests on inbound traffic, for the reasons that this and similar clerical work is, and heretofore has been, part of the transportation service, and is amply provided for in the freight charges. See Canadian Pacific Tariff E-2945, Supp. 93, C. R. C. E-3280, Supp. 93, and Grand Trunk Tariff C. R. 386, Supp. 4, C. R. C. E-4219, Supp. 4 originally effective November 1st, 1920."

The election of officers for 1921 resulted as follows: President, A. H. Campbell; Vice-President, W. D.

Hurlbut; Treasurer, E. L. Meyers; Secretary, T. T. Webster.

Executive Committe.—The foregoing officers and J. F. Dougherty, C. C. Furgason, G. E. Griffith, A. D. Huff, Guy Tombs.

In his remarks, upon taking the chair, President Campbell stated that at the next meeting of the Executive Committee, he will bring up the question of having the League prepare a reliable list of paper manufacturers, showing the location of each mill engaged in the manufacture of each grade, the name of the company manufacturing same, and the daily normal production.

COURAGEOUS IN ENGLAND AND FRANCE.

The remarkable courage and cheerfulness of the laboring classes of England and France in the face of poverty, privation and unemployment was warmly extolled by Mr. Howard Smith, of the Howard Smith Paper Mills, in speaking to the Pulp and Paper Magazine of his recent trip abroad.

Mr. Smith was in France during last November, and in London, England, in December. In neither country did he observe any revolutionary tendencies.

He paints heart rending pictures of the devastated districts of France and expresses glowing admiration for the cheer and good will with which the men, women and girls of that country are undertaking the gigantic task of putting in shape the reclaimed lands.

In Amiens, in Peronne and in Albert he received never-to-be-forgotten impressions of women and children living in crude huts, in a bleak, barren, war-stricken country — a landscape dotted with white crosses. But already, he states, a remarkable improvement has been effected.

In London, as in France, Mr. Smith perceived no symptoms of labor unrest though there was much unemployment and consequent suffering. No less than 240,000 returned soldiers out of work was the estimate given. The retail stores seemed to be extremely busy, in spite of very high prices.

Mr. Smith noted a widespread change of sentiment in favor of protection. Many who were Free Traders before the war have changed their view and especially among the laboring classes. One "Soap Box Orator" was heard in an impassioned plea for protection which was widely cheered by the surrounding throng. Mr. Smith feels that England wants this policy and that it is sure to come.

With regard to the Pulp and Paper industries, Mr. Smith states that the mills were quiet in England while he was there and that they are so now according to reports received from that country.

With regard to trade conditions in this country, he states that things are commencing to improve. Very little business is being transacted with the States, a condition which he attributes to the rate of exchange. With regard to future prospects, Mr. Smith expressed himself as unable to prophesy.

"The paper business is the servant of other business," he says. That is to say, if general business conditions are good, merchants must buy wrapping paper to wrap up their wares. On the other hand, if trade is quiet, there is more demand for the finer printing papers for advertising."

As for paper prices, Mr. Smith states that they have reached rock bottom. No lower prices are possible.

PLANTING FOR PULP AND LUMBER.

By Great Southern Lumber Company, Bogalusa, Louisiana.

In carrying into effect the forestry policies of the Great Southern Lumber Company, they set to work early in the Autumn season of 1920 to collect seed cones of several varieties of pine. It was necessary to find out how to get these seed by doing it as specific directions for harvesting pine seed are hard to find.

In case of loblolly or old field pine seed, this Company advertised in all the local papers that they would pay at the rate of $3.00 per pound for seed well cured and thrashed. There were no takers. For the Company, this was fortunate because the actual cost to the Company for about one thousand pounds of the variety has been well under $2.00 per pound.

In case of longleaf, one probably could have contracted with us at around $2.00 per pound. No one seemed to want the job. We were lucky again as the 4,000 pounds collected by ourselves cost about 50c per pound.

Planting this considerable quantity of seed is now engaging the Department of Forestry of the Company. More than 2,800 acres of cut-over land has already been sown to three varieties: loblolly, slash and longleaf. Because of clean logging the unfenced and unplowed area is covered rapidly by the crews employed to broadcast the seed. 1-1-5 pounds of longleaf seed are used per acre and the process of broadcasting the seed costs 15c per acre.

In case of the 800 acres fenced in 540 acres of the inclosed portion was plowed. The plowing was done with one-horse turning plows in the Summer by farmers after the crops were laid. Rows eight feet wide with a few plowed furrows on each row was the method used. This plowed area was planted to loblolly or old field pine at the rate of about 3-5 pounds per acre. The seed was drilled on the plowed row at a cost of 32c per acre. This cost, of course, did not include the cost of plowing and fencing.

All this planting has been done on land where there are but few seed trees, and is experimental. The Company will in the main depend on natural seed fall to reforest their cut-over lands.

Our chief enemy to be overcome in restocking cut-over lands, either by natural or artificial means, is periodic woods grass fires. In case of longleaf pine, hogs run a close second. In order to bring the planted seed in quick and ready contact with the mineral soil the dead grass was burned ahead of the planting. This provides protection to the young plants for about one year. In the meantime fire lanes and other precautionary steps will be taken in order to provide all the protection which can practically be given until the seedlings reach that stage where further precaution will not be so necessary. The Company is well aware of the risk which is being taken in losing seed by feeding birds and rodents, insects, etc. There were few, if any examples or experiments to follow, however, and we will know after we have tried.

The Bently timber limits and mill at St. Martin, N.B., have been taken over by the Pejepscot Pulp & Paper Company, from A. F. Bentley & Son, Ltd., and A. F. Bentley, ex-M.P.P. All the Bentley holdings in the eastern section of St. John county, with exception of their general store, are reported included in the transfer.

FIBRE BOX BUSINESS FOR 1921.

(From "Fibre Containers" January 1921.)

In times like the present we begin to appreciate the great value of statistics and charts to guide us by furnishing indications of what the future has in store. And, strange to say, men who assume a pessimistic attitude toward business for 1921 have refused to cooperate in the gathering and publishing of data which would be of great assistance to them and others in making plans for the future.

We think that more fibre boxes will be used in 1921 than were used in 1920. But we are not in a position to make an accurate guess without records of the production or consumption in previous years. It is known to everyone that statistics and charts would indicate a steady increase in production and consumption of fibre boxes from 1914 up to 1921. Now this natural increase or evolution will continue and will probably be hastened by the present conditions. If we had the data to make a chart we could tell approximately when the consumption of fibre boxes would reach the highest previous level.

Every firm should have its own business chart. If the firm's increases in production have been proportional to the increases in consumption in recent years, then they may furnish an accurate indication of the future. Moreover, without charts for comparative purposes a firm does not know whether it is advancing or slipping back in the industry. Like a city and its population the city is slipping back if it does not have the proper percentage of increase. Even though there is a percentage of increase in a firm's business that percentage is not sufficient unless it equals the increase in consumption of all the similar products manufactured. From your books you can get your monthly production and sales figures and plot them.

How long the present slump will last is uncertain. It is beyond our control. A readjustment of prices is rapidly being made. From observation we believe that merchants in smaller cities have already made readjustments and these in the larger cities will do so this month. In some instances prices have been cut below cost of replacement in order to stimulate business. Where there has been profiteering especially in raw materials replacement values of merchandise will be lower than in 1920 but this will not hold for all lines. However the January sales should show the lowest prices that we may expect to see. From February to April, when replacements are made, price will again become normal and will be in accordance with the cost of the merchandise to the retailer.

Most of our present troubles were due to profiteering. Foreign markets afforded great oportunities and made possible the exorbitant prices at home. We have seen what can happen and we should devise legislation to prevent repetition should we be unfortunate enough to engage in another war.

Everyone has to suffer with the profiteers. In fact, the profiteers are the good fellows today, because they can make the greatest price reductions. But with inventories made and books closed for 1920, the old goods will be turned over quickly. We will be ready for a fresh start and a return to normal market conditions.

We look forward to a heavy increase in the consumption of fibre boxes when the replacement of merchandise begins in earnest. Unless the slump in business affects the total wages materially, business will become normal and the consumption and production of fibre boxes will soon assume their normal increases.

U. S. NEWSPRINT REVIEW FOR DECEMBER.

The increase in the production of newsprint for December, 1920, over December, 1919, amounted to 2 per cent for total print and about 6 per cent for standard news, according to the Federal Trade Commission.

The increase for December 1920, over December 1918, amounted to 24 per cent. total print and 26 per cent for standard news.

Mill stocks of both total print and standard news increased during December, 1920.

In addition to the stocks given above 144 tons were reported on hand at terminal and delivery points on December 31, 1920.

The idle machine time reported to the Commission was 923 hours less than that shown in November. No lost time due to labor conditions was reported by newsprint mills.

The imports of newsprint for November, 1920, were 1,982 tons more than for November, 1919. The exports for November, 1920, were 499 tons less than for November, 1919.

The imports of mechanically ground wood pulp for November, 1920, were 1,904 tons less than for November, 1919. The exports of domestic wood pulp were 246 tons more than for November, 1919.

Stocks of rolls in the hands of jobbers at the end of December were 134 tons less than the stocks in the hands of the same jobbers at the beginning of the month. Stocks of sheets were 747 tons greater at the end of December that at the beginning of the month. The net increase in the total stocks of newsprint in the hands of jobbers at the end of December amounted to 613 tons.

Commitments to sell roll news were 8,584 tons greater than commitments to buy. Commitments to sell sheet news were 919 tons less than commitments to buy. Total commitments to sell both rolls and sheets were 7,665 tons greater than commitments to buy.

Publishers' stocks increased 10,128 tons during the month. The average daily tonnage used during December was 104 tons less than the average used in November.

Publishers' stock and transit tonnage on December 31st, represented slightly less than 47 days supply at the existing rate of consumption.

Eighty-five publishing concerns held about 70 per cent. of the tonnage on hand at the end of the month.

The domestic consumption of standard news by metropolitan dailies using between one-half and three-fourths of a million tons annually for December, 1920, when compared with December, 1919, shows that the consumption for the month of December for both years was approximately the same, and increased slightly more than 23 per cent for December, 1920 over December, 1918.

Average Prices Paid by Publishers.

The weighted average price of contract deliveries from domestic mills to publishers during December, 1920, f.o.b. mill in carload lots for standard news in rolls, was $5.969 per 100 pounds. This weighted average is based upon December deliveries of about 50,000 tons on contracts involving a total tonnage of approximately 370,000 tons of undelivered paper manufactured in the United States.

The weighted average contract prices based on deliveries from Canadian mills of about 24,000 tons of standard roll news in carload lots, f.o.b. mill in December, 1920 was $5.770 per 100 pounds. This weighted average is based upon the December deliveries on contracts involving slightly more than 69,000 tons of undelivered Canadian paper. The greater number of these are short-term contracts expiring before 1921.

The weighted average market price for December of standard roll news in carload lots f.o.b. mill based upon domestic purchases totalling slightly less than 12,000 tons was $7.854 per 100 pounds. This weighted average may be less than market quotations on account of contract relations, quantity discounts, mill stock ownership and other causes unknown to the Commission.

U. S. WOOD PULP REVIEW FOR DECEMBER.

Pulp Production.

The following is a tabulation by the Federal Trade Commission of the production:

	Production for the month.
Ground Wood Pulp	146,718
Sulphite, News Grade	62,357
Sulphite, Bleached	41,911
Sulphite, Easy Bleaching	4,369
Sulphite Mitscherlich	6,549
Sulphate Pulp	9,804
Soda Pulp	30,179
Other than Wood Pulp	640
TOTAL — For all Grades	302,527

Total stocks of all grades of pulp in the mills on December 31 amounted to 172,649 tons. Mill stocks of Easy Bleaching Sulphite, Soda Pulp, and other than wood pulp decreased during the month. All other grades increased.

Ratio of Stocks to Average Production.

Comparing the stocks on hand at the domestic pulp mills at the end of the month with their average daily production based on the reports covering the years 1917, 1918, and 1919, the figures show that:

Ground wood pulp stocks equal slightly less than 28 days average output. News grade sulphite mill stocks equal slightly more than 7 days average output. Beached sulphite mill stocks equal slightly less than 4 days average output. Easy bleaching sulphite mill stocks equal less than 5 days average output. Mitscherlich sulphite mill stocks equal less than 11 days average output. Sulphate mill stocks equal slightly less than 16 days average output. Soda pulp mill stocks equal slightly more than 5 days average output. Mill stocks of "other than wood pulp" equal about 3 days average output. Total mill stocks of all grades equal slightly less than 16 days average output.

DISTRESS IN SWEDISH PULP AND PAPER TRADE.

The Stockholm correspondent of the London Times writes about acute distress in the Swedish pulp and paper trade, newsprint being alone excepted.

The writer says: "The crisis in the paper and pulp industries has become more acute during the last week or two. The renewal of the contracts between the millowners and their workmen, which expired at the end of the year, is still in suspense.

"In view of the depressed conditions of the trade, the owners have decided to reduce production in order to relieve the market. They are prepared to reduce their working days to three or four a week rather than dismiss half their workmen.

"Although the prices of paper and cellulose have fallen considerably, very few sales are taking place and hardly any shipments are being made, with the exceptions of small deliveries in connection with the outstanding contracts. Reduction of production is considered the only means of meeting the crisis, and the Federation of Pulp Factories proposed at their last meeting to limit their output by general agreement.

"Printing paper alone continues in demand, and the mechanical pulp market is comparatively less depressed. On the whole the pulp market, however, is more or less at a standstill. By a combined limitation of output, it is hoped to prevent over-production and to avoid the disorganization of the trade, with consequent further unemployment. For Swedish commerce the question is of great importance, pulp being, next to timber, the principle article of export."

A GOOD TIME TO CLEAN HOUSE.

(Correspondence to the Editor.)

Annapolis Royal, N. S., February 7, 1921.

In the face of the enormous loss we have suffered recently in our standing timber supply through the ravages of the bud worm and fire, why grind up our wood which can not be replaced in less than a century and sell pulp at today's price **when a short shutdown of the mills for much needed repairs would be more in order?**

The present surplus of pulpwood is simply the result of a temporary readjustment of business, an attempt to salvage some of the worm killed timber, and the drop in price of lumber which caused a diversion of logs from lumber to pulpwood. As soon as this present stock is used up, **wood and lumber will cost more than ever.**

Shut down and repair your mills and buy all surplus wood offered, as the end of our standing supply is in sight, and every indication points clearly to big business in the very near future.

The history of the pulp and lumber business shows that in the past prices have very frequently been **below the cost of replacement.** This has simply been caused by an over-production of these commodities and in spite of the fact that our timber is a rapidly wasting asset and can not be replaced in this generation.

The time is now here when the paper mill owner and lumber manufacturer will no longer ruthlessly sacrifice what remaining timber supply he may have and sell the product of his mills at less than a fair profit, which for the future must include very much increased cost for protection of his holdings from the ravages of insects and fire as well as much longer hauls for his logs on account of the remote location of the remaining supply.

Higher prices for land, lumber, and paper will materially reduce our per capita consumption, curtail waste, and prolong the life of our forests.

Owing to Canada's enormous loss from the spruce bud worm and fire, an embargo or export tax on the shipment of all Canadian pulpwood will be compulsory.

Frank J. D. Barnjum.

If a man wishes milk when traveling in the forests of Caracas, South America, Mother Nature supplies him most abundantly from the cow-tree. This product has not only the exact appearance but all the qualities of cow's milk.

News From Europe

(Special Translations for the Pulp & Paper Magazine.)

A German on "Russian Business"

To Germans who hope for trade with Russia Dr. W. Hd. in the Papier-Markt tells them facts which spoil the "dream", or picture of the working-class and business Utopia. There is no business to get, because the Bolsheviki have made no effort to produce. Bolshevism destroys, annihilates, without creating. In Russia men are living for the moment, knowing that the day must dawn when there will be no single thing left to exploit. Certainly there is no thought of exploiting the boundless unscratched mineral wealth—the gold, silver, platinum, coal—for there is neither capital nor machinery for the purpose, and corn, the chief product of the country, is the possession now of the new States, Ukraine, the Baltic States, and Finland. There is always the obstacle that business with Russia would not be an exchange of goods, since the Soviets have none to sell, and, even if they had, could Germans trade with charlatans who might pay them in money stolen from banks and private concerns?—Der Papier-Markt, January 20, 1921.

Paper Mills in Denmark.

The output restriction scheme is now in operation in all Danish mills, which work only five days out of the week.—Finsk Pappers-Och Travarntidskrift, January 15, 1921.

The Pulp Market in Sweden During 1920.

Trade has steadily fallen off in a year marked by extraordinary fluctuations in prices. Early in 1920 the active demand caused quotations to rise, but, as a result of the general depression, they began to drop in October, and now stand at about 850 kr. per ton for easy bleaching sulphite, and about, and about 750 kr. for strong sulphite. The official export figures are not yet available. It is estimated, however, that exports of bleached sulphite amounted to 45,000 tons of unbleached sulphite to 540,000 tons dry weight, or 585,000 tons in all, compared with 561,325 tons in 1919. Export of bleached and unbleached sulphate amounted to about 142,000 tons dry weight. — Affarsvarlden, January 5, 1921.

German Competition.

A correspondent who has just finished a tour of the paper markets in Sweden, Germany, Holland, England, France and Belgium, seems to think that by degrees the German paper industry is getting into its stride, and though the influence on the markets in pulp and paper is not yet apparent, it will duly make itself felt. In Hamburg it seems, optimism is general. The most notable thing in this letter is that Germans are working with prodigious energy to recover their lost position. —Finsk Pappers-Och Travarutidskrift, December 31, 1920.

The Germans on "Dumping" Paper.

"The task of our Export Bureau," says the Papier-Zeitung, "is very difficult. If the export price of paper is fixed too low, we shall hear of German "dumping"; if, on the other hand, it is too high, we shall be accused of profiteering." —Papier-Zeitung, January 16, 1921.

"We Germans, it is said, learn nothing from history. This may be true, for everywhere one is trying to bring about a fall in prices. It seems that industrial circles have not grasped the consequences clearly." With the fall in prices and deflation the paper industry will be gravely dislocated.—Friedrich Schwiers, Wochenblatt fur Papierfabriktion, January, 22, 1921.

The Paper Industry of Czecko-Slovakia.

The popularity of the new Czecko-Slovak government is an interesting feature of the market reports from many countries. This popularity is not so much political, as an affair of advertisement and pushing by press-agents, but it has something like a bullish influence on Bohemian industry, which is probably not free from exaggeration.

Th following from a Norwegian journal shows how difficult trade is under present economic and customs' regulations:—

Bohemia proper had 51, Slovakia 6 large paper mills. During the war and in the times after it, the competing neutrals and also the Entente countries got a big start of the Czech industry. Yet in spite of the colossal costs of production and freights, Czecho-Slovakia can export paper because of the low valuta. With the rise of the Czecho-Slovak state, new frontiers were formed and markets find themselves with a very restricted field for exploitation. This is a great obstacle to the Czech paper industry. Local demand is slight and the hight freight rates to Bohemia make competition with the Bohemian industry impossible, and the Czech mills are forced to rely chiefly on the Hungarian markets. In addition to newsprint and writing papers there are considerable export possibilities for other sorts; the home demand is covered by two-thirds of the restricted production, and exports of the remaining third is regarded as essential for the existence of the paper industry. Statistics show that in spite of the difficulty of exporting paper, and other commodities, the mills must have disposed of important stocks, for they are now under the necessity of importing raw and auxiliary materials from abroad.—Teknisk Ukeblad, December 17, 1920.

EXPORT PAPER TIED WITH DAWSON.

About one thousand five-hundred (1,500) spectators crowded into the Victoria Rink to see a very interesting round of the Pulp and Paper Hockey Schedule.

The first game was between Howard Smith Paper Mills, and the Abitibi Power and Paper Co., resulting in four goals to four.

The second game between C. F. Dawson and the Canadian Export Paper Company was easily the finest game of hockey played by this league in this season. The Canadian Export winning a well deserved victory by six goals to two. The Canadian Export by winning this game have now tied with the C. F. Dawsons' for first place.

Riordon won out by five goals to two, the score indicating their supremacy over the McFarlane team.

League Standing.

	W.	L.	D.	Pts.
Canadian Export	5	1	1	11
C. F. Dawson.	5	1	1	11
Howard Smith.	2	2	3	7
Riordon Paper	3	3	1	7
McFarlane Sons & Hodgson	2	4	1	5
Abitibi Power and Paper . .	0	6	1	1

PULP AND PAPER NEWS

Mr. Hugh S. Eayrs has taken over the management of the Macmillan Publishing Company of Canada, Limited, succeeding Mr. Frank Wise, who tendered his resignation at the annual meeting held a few days ago. Mr. Wise has been manager of the publishing house for the past 16 years. Mr. Eayrs is well known in Toronto, having been employed in newspaper and magazine work in this city for some years before he joined the staff of the Macmillan Company in October 1916.

Visitors to Toronto this week in connection with Ontario's lumber and pulp interests were Col. J. A. Little and W. H. Russell of Port Arthur and W. C. Maginnes of New York.

The capital stock of the Dryden Paper Company, Limited, has been limited to $3,000,000 under the Act respecting the Licensing of Extra Provincial Corporations. J. B. Beveridge of the town of Dryden, in the district of Kenora, has been appointed the company's attorney.

The Republic Flow Meter Company of Canada, Limited, which specializes in meters for pulp and paper mills, had an excellent exhibit and demonstration of their product at the recent motor show in New York. The exhibit was in charge of Mr. Storey and Mr. Cunningham of the Toronto office.

Mr. W. G. H. Logie, who, since his return from overseas service, has been associated with his father, Mr. James Logie, Toronto representative of the Canada Paper Board Co., Limited, has been appointed Ontario agent for the National Gum and Mica Company of New York and will have his office in Room 312 Foy Building, Front Street, Toronto.

Mr. V. T. Haney and Mr. Alex. Gillies, of the Toronto office of the Rolland Paper Co., Limited, are spending a few days at the Quebec mills of the company.

NEW MILLS FOR BRITISH COLUMBIA.

According to an announcement by the provincial registrar of companies in Victoria, British Columbia is to have another big pulp and paper enterprise. This is the Prince Rupert Pulp and Paper Company, Limited, which has just been incorporated with a capitalization of $4 000,000 to manufacture paper on a large scale in Northern British Columbia. The head office of the company is in Vancouver.

With a capitalization of $15,000,000 the Harrison Lumber and Pulp Company has been granted provincial registration. The company, which is headed by Sir Douglas Cameron and the Rat Portage Lumber Co., will start work almost immediately on the new pulp mill, which is to be erected at the mouth of the Harrison River, with a capacity of sixty tons of kraft paper per day. The initial cost of the plant at Harrison will be $3,000,000.

The company's plans include the construction of a pulp mill, and possibly a paper mill at Kitamat.

Walter R. Rapp, formerly of the Arthur R. Rapp Company, will represent the Invincible Paper and Pulp Corporation in the vicinity of Chicago. Mr. Rapp will call on paper jobbers and converters only. He will operate under the name of Walter R. Rapp Co., Conway Bldg., Chicago. Mr. Rapp will handle the Invincible's line of Ground Wood specialties, Newsprint in rolls and sheets, Novel News, Half Tone, Writings, M. F. Book, Hanging and Tissue.

The capital stock of the Canadian Pulpwood Corporation, Limited, has been increased from one million dollars to one million five hundred thousand dollars issuing 5,000 shares of one hundred dollars each.

THE PULPWOOD SITUATION.

As a result of a decided hesitancy on the part of the dealers and consumers in their respective unwillingness to sell or buy, the pulpwood market has developed into an appalling deadlock. Confidence, the pillar of commerce, seems to have crumbled under the pressure of opposing anticipations. The consumers are looking forward to still lower prices which they don't regard as being anywhere near a normal level. They, therefore, are trying to induce dealers to liquidate their large accumulations which it may be impossible for them to hold for any length of time. On the other hand, the dealers have yet in mind the higher prices they paid for pulpwood and therefore, despite the added expense of holding stocks, prefer to hold them rather than accede to the bids of consumers. Moreover, middlemen dealing in pulpwood are exercising restraint on the assumption that a general resumption of activities in the industrial world will shortly bring about a period of demand and consequently they will be able to sell with the upward trend. They feel confident that the mills depending on them for pulpwood will sooner or later need to replenish their gradually decreasing stocks. Paper is a constant necessity and manufacturers are not going to keep their mills idle in order to influence the ones upon whom they depend for their raw material when there is a demand for their product. To attempt such a move would be foolish,

In any event, the deadlock must soon be broken and it seems within reason to assume that the break will occur in the ranks of the smaller dealers who are less able to hold out indefinitely for an increase in demand whose coming is problematical.

Bankers on whom some dealers depend, have no desire to enter into a game of chance. They point out that these dealers can do better in the end by accepting a slight loss rather than wait too long. Even if a dealer were to hold back in the hopes of taking advantage of the first few advancing points of a rising market, it is questionable whether the gain would compensate the accumulated charges on interest alone.

With this probability in view, it is very possible that there will be a resumption of activity in this market as well as the paper industry within the approaching weeks of spring.

Technical Section

REVIEW OF RECENT LITERATURE.

A-18. Determination of the acidity of alum solutions. I. BELLUCCI and F. LUCCHESI. Gazz. Chim. Ital., **49**, 216-41, (July 10, 1919); Chimie & Industrie, **4**, 771, (June 1920). In the industrial prepn. of $Al_2(SO_4)_3$ or of alum for the manuf. of paper or the mordanting of fabrics it is necessary to check up frequently the acidity and the Al_2O_3 content of the liquors. As it is important that this be done rapidly volumetric methods must be used. They are based on the reactions:

$$H_2SO_4 + 2NaOH = Na_2SO_4 + 2H_2O$$
$$Al_2(SO_4)_3 + 6NaOH = 2Al(OH)_3 + 3Na_2SO_4.$$

To a measured amt. of soln. is added 2 cc of **n** H_2SO_4 and the acidity is titrated with **n** NaOH, using methyl orange as indicator. If **a** cc are used the free acidity is equiv. to **a-2** cc. If **a** is less than 2 the free Al_2O_3 is equiv. to **2-a** cc. If **a** = 2, the liquid is neutral. Phenolphthalein is next added to the titrated soln. and then 5 cc of $BaCl_2$ soln. (to prevent the formation of basic Al sulphate). The soln. is diluted to 200-500 cc and **n** NaOH is added to a permanent pink coloration. Let **b** = total no. of cc required for the 2 titrations. A second sample is then treated with 2 cc **n** H_2SO_4 and 5 cc $BaCl_2$ soln. and dild., and about 1 or 2 cc less than **b** are quickly run in. The soln. is boiled for 5 min., cooled, and the titration completed. If **c** cc are used, the combined Al_2O_3 is equiv. to **c** ÷ **a** cc. —A.P.C.

B-3. What can be done to prevent destruction of our forests. Paper, 11-4, 23, (July 7, 1920); 11-3, (July 14, 1920); 13-5, (July 21, 1920); 17-9, (July 28, 1920). The various stages in the destruction of forests by fire are described. The operations of fire protection are divided under 3 main heads: prevention, detection, control. Each of them is discussed in turn. Owing to its very nature and magnitude, the task of fire protection should be carried out co-operatively by timber-owners, State govts., and the Federal govt. The legislation required for really effective fire protection and reforestation is discussed in detail.—A.P.-C

C-4. Pulpwood reclaimer. Can. Chem. J., **4**, 196 (July 1920). The pulp wood reclaimer is a machine for handling pulpwood blocks from storage. The main principle consists in retaining the angle of repose of the block pile, so that the blocks can come into the conveyor as needed. A bottom carriage runs on a portable track on the ground. Connected to it is a boom lying at approx. the angle of repose of the pile, with its upper end resting on the crest of the pile on a small truck. This boom, by means of idlers, carries chains which drag down the slope of the pile and pull the blocks into a portable conveyor at the base of the pile. The chains have pointed attachments set at such an angle that they will engage the wood and set it in motion. The reclaimer can be used as a stacker if necessary, being built as it makes the pile.—A.P.-C.

E-2. Sulphite waste liquor utilization. RALPH H. McKEE, Ph.D., Columbia University, N.Y. City. Pulp & Paper, **18**, 715-8, (July 8, 1920); Paper, 21-3, 30, (July 21, 1920). See also, Paper, **24**, 584-6, (1919); Pulp & Paper, **17**, 581-2, (1919), **18**, 81, E-2, (Jan. 22, 1920); and Paper, **26**, 368-72, (1920), Pulp & Paper, July 8, 1920. A description of the Ekstrom process for sulphite alcohol and the process devised by the author wherein the SO_2 and SO_3 are not removed before fermentation. Figures are given for the cost of production in a 100 t. sulfite mill. The fuel value of the residual solids after fermentation is sufficient to evap. the liquor and leave a substantial surplus for generating heat or power.—A.P.-C.

E-2. The utilization of sulfite waste liquor. PAUL RAZOUS. L'Industrie Chimique; Papier, **23**, 134-5 (June 1920). Brief notes on a few of the uses of sulfite waste liquor.—A.P.-C.

E-2. Utilization of sulfite waste liquors. Anon. Chem. Trade J., **65**, 168, (Aug. 16, 1919); Chimie & Industrie, **4**, 813, (June 1920). Notes on the utilization of sulfite waste liquor for the prepn. of alcohol, fodder, fertilizer, mordants, azo dyes (of theoretical interest only), and S dyes.—A.P.-C.

E-4. The resistance of filling materials for absorption towers to the passage of gases. F. C. ZEISBERG. Chem. Met. Eng., **21**, 765-7, (Dec. 31, 1919); Chimie & Industrie, **4**, 773, (June 1920). Summary of expts. carried out to det. the press. required to circulate a given vol. of gas per min. through an absorption tower of known dimensions filled with known materials and through which a given vol. of water per unit section is circulated. The results show that stoneware fillers offer less resistance and leave more room for circulation of the gas than do quartz or coke.—A.P.-C.

H-5. The bleaching of papermaking fibers. FRANK. Papeterie, **42**, 491-9, (June 10, 1920), 544-8, (June 25, 1920). A brief discussion of the relative merits of bleaching powder and electrolytic bleach (NaOCl), with a few words on bleaching by means of $KMnO_4$.—A.P.-C.

L-5. Cellulose phthalate: its preparation and properties. HAROLD A. LEVEY, Color Lab., Bur. of Chem., U. S. Dept. of Agriculture, Washington, D.C. J. Ind. & Eng. Chem., **12**, 743-4, (1920). Hydro-cellulose is prepd. by passing Cl into glacial AcOH until it is colored yellow, and heating cotton with abt. 6 times its wt. of this acid soln. at 70°C for 1-3 hrs. The cotton has then been reduced to an impalpable dust, and is washed free from acid and dried. 10 parts of the modified cellulose are treated with a soln. (at 70°C) of 30 parts of phthalic anhydride and 2.5 parts of fused $ZnCl_2$ in the least possible quantity of diethyl phthalate, for 24 hrs. at 70°C. The product is washed free from solvent and reagents and dried **in vacuo** at a temp. not exceeding 70°C. It is practically insol. in the usual org. solvents and slightly sol. in Schweitzer's reagent.—A.P.-C.

K-12. Formation of paper on the Fourdrinier wire. Papeterie, **42**, 595-7 (July 10, 1920). Transl. of art. in Paper, **25**, 579-81, Nov. 19, 1919. See Pulp & Paper, **18**, p. 143.—A.P.-C.

K-12. The manufacture and care of Fourdrinier machine wires. H. LINDSAY. Paper, 19-20, (July 7, 1920); 16, 28, (July 14, 1920). A brief description of the manuf. of Fourdrinier machine wires, comprising raw materials, wire drawing, annealing, weaving the wire, measuring and cutting, soldering and stitching, stretching, inspection, packing and shipping. Pointers are given on the proper methods of storage, handling and using the wires so as to avoid any unnecessary wear which would shorten the life of the wires.—A.P.-C.

K-15. Investigations in coating raw stock at the Bryant Paper Mill. ELBERT G. MILHAM. Paper, 15-6, 34, (July 28, 1920). The importance of cooperation between chemist and mill depts. is discussed. At the Bryant Paper Mill this resulted in the standardizing and controlling of the phys. properties of the raw stock for coating which enabled the paper mill to turn out better and more uniform stock. The methods of testing the paper are described.—A.P.-C.

K-18. Manufacture of jute board. JOHN PFISTER. Paper, 16-7, (July 21, 1920). P. advises the use of container clippings in jute liner fillers. To prevent the peeling of the liner, get the liner as short as possible, then run it on the bottom of the sheet as it passes through the wet end of the machine so that each couch will have the opportunity of knitting the liner tighter to the filler. Under these conditions 0.004½ liner should be sufficient. H. P. requirements of machines, jordans and beaters under stated conditions are given and a plea is made for the publication of more information of that nature from all mills.—A.P.-C.

M-9. Cutting transportation costs with motor trucks. GEO. H. CRYAN, Paper, 23-4, (July 21, 1920). A brief discussion of the advantages to be derived by paper mills from the use of motor trucks outside and electric trucks inside.—A.P.-C.

M-0. Modern testing apparatus for pulp and paper mills. F. M. WILLIAMS. Paper, 25, 32, (July 21 1920). See also Paper **24**, 586-8, (1919); Pulp & Paper, **18**, 80, A-4 & 5, (Jan. 22, 1920). A brief discussion of the importance of testing materials and supplies, and more especially pulp, in pulp and paper mills, together with a description of Williams' Standard Pulp Testing Outfit.—A.P.-C.

M-0. An efficient combustion recorder. Paper, 25, (Aug. 4, 1920). The Mono Corporation of America are putting out a combined CO_2 and CO recorder. If used without the CO supplement, it may be used to record SO_2.—A.P.-C.

N-4. Economy in the boiler room. N. P. WINCHELL Jr. Paper, 13-4, 32, (July 28, 1920). Besides the possibilities of increasing combustion efficiency, there are 5 important items which should be watched: 1) Prevention of soot and scale from covering the heating surfaces of the boiler. 2) Prevention of air leaks and infiltration into the boiler setting. 3) Stopping steam leaks from boiler, pipe lines, pumps, etc. 4) Installation of proper instruments in the boiler room. 5) Keeping sufficient boiler room records. The importance of each of these is discussed.—A.P.-C.

N-0. The Ulrici steam separator. Papeterie, **42**, 554, (June 25, 1920). In the Ulrici separator the steam is made to impinge vertically downwards on a baffle plate, the water and dirt being drawn off at the bottom and the separated steam going upwards, thereby effecting a complete and efficient separation.—A.P.-C.

N-5. Storing and handling fuel. N. P. WINCHELL Jr. Paper, 19-21, (Aug. 4, 1920). Pointers on the proper methods of storing and handling coal so as to cut down losses to a min.—A.P.-C.

O-3. Lime and barium carbonate as water softener. C. A. MEHRING. Chem. Met. Eng., **21**, 629-32, (Nov. 19, 1920). Chimie & Industrie, **4**, 783, (June 1920). The raw water is treated with a satd. soln. of CaO. $CaCO_3$ settles out in the tank and the water containing an excess of CaO is sent to a conical tank containing $BaCO_3$, where $BaSO_4$ is pptd. The water is filtered through a special sand and gravel filter thus freeing it from sulphates.—A.P.-C.

R-5. Post-war influence on paper manufacture in Italy. Paper, 21-2, (Aug. 4, 1920). An outline of the situation of the Italian paper industry at the present time.—A.P.-C.

R-5. European paper manufacturers face critical problems. THOMAS REECE. Paper, 22-3, (Aug. 4, 1920). An outline of the situation of the paper industry in Central Europe at the present time.—A.P.-C.

R-5. European paper production cut by coal shortage. PAUL BARTHOLOW. Paper, 9-10, 30, (July 14, 1920). An analysis of the coal situation in Europe, in so far as it affects the pulp and paper industries, showing that the production of the latter is greatly handicapped and reduced owing to shortage of the former.—A.P.-C.

R-5. Swedish sulfite mills reduce output to meet market. Paper, 11-2, (July 21, 1920). A brief analysis of the situation of the Swedish sulfite industry during the last 5 yrs., showing why the mills were forced to reduce their output in the early part of 1919.

R-5. Finnish manufacturers centralize the control of wood pulp supplies. Papermaker; Paper, 12, 32, (July 21, 1920). The Finnish industries dependent on wood as their raw material have formed the Central Federation of Finnish Wood Refining Industries, in which only the carpentry and cabinet-making industries, veneer and bobbins factories are not as yet represented. Its object is to watch over the common economic interests of the industries as regards proposed legislation and imports, customs and freight tariffs, and gen. com. policy. All sales are affected by the association and not by any of the separate firms. Its usefulness to the industries during these trying times is demonstrated by the general prosperity and greatly increased exports of its members.—A.P.-C.

R-6. Taking the load from the superintendent's shoulders. FRANK A. WINEGAR. Paper, 18, (Aug. 4, 1920). The papermill supt. is neither a chemist nor a color salesman. If the latter would only take the trouble to study the needs of the individual mills it would greatly help the supt. and at the same time would tend to create better feelings towards the color industry.—A.P.-C.

R-0. The paper problem in France. A. LECHATELIER, Prof. au Collège de France. Papeterie, **42**, 530-9, (June 25, 1920). A discussion of the present shortage of raw material for papermaking. According to the author the soln. lies in the establishment of a large no. of small mills in N. Africa to work up esparto into pulp which could then be sent to the paper mills in France, and in France to similarly work up reeds and the like.—A.P.-C.

UNITED STATES NOTES

While industrial wages generally throughout the United States have been revised downward, an exception to the rule of reduction is to be found at the plant of the Robert Gair Company, Brooklyn, manufacturers of paper goods—labels, boxes, cartons, paper packing cases and a great variety of paper containers. The Gair Company during the war period—in a space of three years—advanced wages about 128 per cent. It is to-day maintaining its wage scale at the peak, at a time when business is slack and when the result may be that the management will have to fall back on past profits to meet the cost of maintaining war wages. George W. Gair, president of the company, holds that it would not be fair to cut down the workers' rate of pay while living costs have not receded to any appreciable extent. "The wage readjustment in industry generally is inevitable, of course," says Mr. Gair. "What the employer can do is to make the readjustment easier for the worker to bear. And when we get back to the lower level of prices I think the worker will be contented with the lower wage. He was more contended before the inflation than during it. He was better off on the old $25 a week than on the $50 a week at the peak of high prices."

Reports current about the meeting of stockholders of the North American Pulp and Paper Company, held last week in New York, have it that a decision was taken by vote for a dissolution of the company and the formation of a new concern, to be known as the Saguenay Pulp and Paper Company. The old concern was an American Company and had to pay both American and Canadian taxes. Details covering changes in the par value of the stock of the new company and the exchange of shares will be made soon after the presentation of the annual report within a few weeks. Reorganized as a Canadian Company, the concern will need to meet only Canadian taxes.

All bids for government paper supplies for next year received recently by the joint Congressional printing committee have been rejected. It was announced that the committee regarded the bids as unsatisfactory and that new bids would be called for.

A recent issue of the Bureau of Foreign and Domestic Commerce Daily Trade Reports contains a communication from Vice Consul Thorling, stationed at Rangoon, Burma, to the effect that a big bamboo-paper pulp plant is to be opened in the Pegu District, Burma, by F. W. Heilger & Co., who are the managing agents for the Titaghur Paper Mills Company, Ltd.

Miss Mary R. Cass, general manager of the F. N. Burt Company, Ltd., one of the best known paper box manufacturing establishments in the United States, was tendered a testimonial dinner recently at Niagara Falls, N. Y. on the occasion of her thirtieth anniversary in the service of the Burt organization. Officials, former officials, salesmen and representative paper box men, some of them coming from remote parts of the country, attended. The splendid record made by Miss Cass was referred to in glowing tributes by the Burt executives and others who spoke. In most of these speeches Miss Cass was credited with having contributed in a great measure to the growth of the Burt Company from an eight person affair to the present organization of 2500.

A ten per cent reduction in wages went into effect Monday at the plant of the Eaton, Crane and Pike Company, manufacturers of stationery at Pittsfield, Mass. The mills are now being operated five days a week. There are 900 employes.

The Lakeview Paper Company, successor to the recently dissolved Lakeside Paper Company, Neenah, Wis., has rearranged its finances and has well under way at present a mill reconstruction project. With the completion of the construction work now going on, the renovated and enlarged mill will rank with the largest in the Fox River Valley. Considerable new machinery is to be installed, including an immense concrete bleach-mixing beater with a capacity of 10,000 pounds. The big machine was constructed according to specifications prepared by the company's engineers, and it is one of the largest, if not the largest, of its kind in the country. The officers of the reorganized company are: L. L. Alsted, president A. J. McKay, vice-president; Louis A. Lecher, secretary.

At hearings held last week before the Ways and Means Committee of the lower house of Congress, representative paper manufacturers—men prominent in practically every branch of the industry—were given an opportunity to present their views on the tariff as it relates to the present situation in the paper trade. Many arguments showing why the manufacturers of paper in the United States should be protected against foreign competition were presented. The Association of American Wood Pulp Importers, though not represented before the committee, filed a brief taking a stand against the idea of imposing an ad valorem duty on pulp. If a duty must be enacted because of revenue requirements, the Association, according to the brief, would much prefer seeing the enactment of a duty on a pecific basis. It urges this on the ground that an ad valorem duty would be a great hindrance to the paper manufacturer buying foreign pulp, particularly since contracts closed at a fixed price involving shipments of pulp from Canadian mills or from abroad, extend over a considerable period of time and are liable to be affected by the occurrence during the life of the contracts of important fluctuations. S. E. Thomason, of the Chicago "Tribune", speaking for the American Newspaper Publishers' Association, urged upon the committee the importance of permitting free entry of newsprint paper from all foreign countries as well as Canada, claiming that the present print paper situation demands such action. "No tariff which could be imposed would cause an expansion in the newsprint industry", was Mr. Thomason's contention. He declared that production in the United States last year was only 70 per cent of the consumption of 2,144,000 tons for the year. He added that he believes the ratio will be lowered this year. The output of the Swedish, Finnish and Norwegian mills has proved so inferior in quality, said Mr. Thomason, that no fear need be entertained by American manufacturers of competition from that quarter, even if the Scandinavian product could be bought at $15 a ton less than the American.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, Feb. 12. — Business generally in the paper trade remains quiet, although there has been a slight revival in some lines. There is a tendency to postpone buying, which is looked upon as a mistaken policy on the part of the consuming public in view of the possibility of a sudden buying era setting in, with its usual corollary of an advance. Wholesale paper dealers say that there will be no further big cuts in paper, although there may be some small adjustments in some lines. Efforts of the manufacturers and jobbers at the present time are being directed toward the establishment of uniform price lists and these are rapidly being gotten on the desired basis, which will mean protection to the big as well as to the small printer or consumer of paper. Printers are coming to see that their profits are not as satisfactory on a low market for paper as when prices are firm and uniform. Without any spirit of combination, the trade is arranging a uniform price list for papers based on a fair margin of profit on costs and one which will offer protection to manufacturers, jobbers and consumers alike. For instance, at the present time, the price of superfine linen record is 60 cents per pound in carload lots. The practice of unloading has largely stopped, and all printers, big and little, pay the same price. Uniform prices on other lines will gradually be established, which will mean that the printer will know exactly where he stands when he is estimating on a job, while he will be without the fear of a competitor getting his paper at a lower figure. In the paper trade, as in other branches of commercial activity, it is argued that the general cost of production has been reduced very little and it is stated that the price of paper cannot come to a much lower point without jeopardizing the industry. One leading jobber states that there will be no further drop in paper and in his opinion next May would see the paper industry on a sound and fairly profitable basis for those engaged in it.

BOOK, BONDS AND LEDGERS. — While these adjustments are taking place as to price, trade in these lines is quiet and there is little demand for either book paper, bonds or ledgers. The mills are receiving comparatively few orders and their tonnage output is small. A number of the mills are taking advantage of the lull in business to make repairs and renovations. The jobbers still have large stocks on hand, and as a consequence are not placing big orders with the mills. The jobbers' orders are of small dimensions, but, in the words of one dealer, "big business is in the air and it will only be a matter of time before it materializes."

WRAPPING PAPERS. — There is a fair demand for both wrapping papers and paper bags, and large stocks that were on hand a few weeks ago are gradually being depleted under gradually increasing calls for paper and bags. Owing to some of the mills having been closed for a time, shipments from the mills fell off some, but jobbers now report no difficulty in getting all the stock they need. One dealer reported last month's business as being equal to the later months of the boom period.

BOX BOARD. — The box board industry is going through a very quiet period with most of the board mills running short time and the box-making mills likewise. Although a lot of inquiries are coming through for stock dealers say that no one appears anxious to close an order and those that are being booked are small. There are signs, however, that trade is going to pick up and normal buying is expected to be resumed by March.

KRAFT. — Few orders are being taken for kraft paper and the trade is extremely dull. Some of the mills are closed down entirely and Wayagamack has not yet reopened, although manufacture is expected to be resumed at the mill very shortly. Kraft pulp is quoted at $115. Kraft paper in carloads lots to Ontario and Quebec points is $11.50; ton lots $13.50 and in less than ton lots $14.50. To the Maritime provinces the price is slightly higher with the freight equalized on St. John and Halifax.

PULP. — While most of the mills are making the usual amount of chemical and mechanical pulp there is very little market for the product and the tendency is to hold off buying pending looked-for reductions in the price. The closing of the board mills in the United States has affected the output of the Canadian mills to a considerable extent, but by the time those reopen, which should be soon now, it is expected that something like normal demand will prevail and the market stiffen. No one appears to know just where the market is at present and there are no fixed prices for any line of pulp. Generally speaking, ground wood is quoted at from $80 to $90; bleached pulp at $140 and unbleached at $100.

NEWSPRINT. — Newsprint is moving fairly free and one occasionally hears of spot lots being offered at a figure below the contract price of 6½ cents, but such quotations are said to be "feelers" only and as far as can be learned have not resulted in actual deals. There is little spread between contract and spot lot rates on big sales, but the small buyer has to pay anything up to 10 cents for his requirements.

RAG AND PAPER STOCKS. — Mill buying of new cottons cuttings has been very limited. The paper manufacturers report very little need for rags as they are running under reduced time and not consuming a normal amount of rags. In the absence of any buying the price tone has been easy and most grades have shaded down perceptibly. No. 1 white shirt cuttings have been offered in small lots as low as 16 cents without stirring much interest. Old cotton rags continue low, but as there are very few rags being graded these days, shipments from collectors continue light. Any operations on the part of the mills should have a tendency to make prices much firmer. White envelope cuttings and soft white shavings have dropped down quite sharply in the past two weeks, while newsblanks is moving in smaller volume than for some time past. Magazines and books have also dropped quite sharply and the paper stock market is very dull, except for an occasional small order from mills which are in immediate need of material.

	Per Cwt. F.O.B. Toronto
No. 1 shirt cuttings	$16.00—$17.00
No. 1 unbleached cotton cuttings	11.50— 12.00
No. 1 fancy shirt cuttings	8.00— 8.50
No. 1 blue overall cuttings	8.00— 8.50
Bleached shoe clip	11.00— 12.00
White cotton hosiery cuttings	12.50— 13.00
Light colored hosiery cuttings	10.50— 11.00
New light flanellette cuttings	11.00— 11.50
No. 2 white shirt cuttings	7.50— 8.00
City thirds and blues (repacked)	1.90— 2.00
Flocks and satinettes	.90— 1.00
Tailor rags	.60— .70
Gunny bagging	1.10— 1.20
Manila rope	3.50— 3.75
No. 1 white envelope cuttings	5.00— 5.25
No. 1 soft white shavings	4.75— 5.00
White blanks	2.00— 2.15
Heavy ledger stock	2.75— 3.00
No. 1 magazine	1.60— 1.75
No. 1 book stock	1.35— 1.50
No. 1 manila cuttings	2.25— 2.50
No. 1 print manila	.75— 1.00
Folded news	.75— .80
Over issue, news	1.00— 1.15
Kraft	2.25— 2.50
No. 1 clean and mixed papers	.50— .60

NEW YORK MARKETS.

New York, February 12. (Special Correspondence.) Raw material has furnished the most interesting feature in the markets this week. The sharp recession in prices on several descriptions of raw stock used by paper mills has been easily the outstanding development, and has tended to divert the attention of members of the trade from finished paper to the raw material situation. Wood pulp, both mechanical and chemical, has dropped considerably in price. Most grades of pulp are now available at lower prices than have prevailed in many a day, at least for the past several years, and while the market tone has steadied to an extent, indications are that prices will go off a bit further before the downward movement is definitely checked. Papermaking rags also have declined in price, especially new cotton cuttings which for a long time have ruled on proportionately higher levels than old rags, and recessions also have been recorded in old papers. In fact, the raw material market almost in its entirety has been on the downtrend.

The fall in raw material prices would seem to be the best possible proof that the paper industry is rapidly becoming readjusted to after-the-war conditions. This industry probably was the last, at any rate one of the last, to feel the depression which attacked business a few months ago. Even when paper mills found themselves in want of orders and when demand for paper decreased in relative proportion to that existing for varied manufactured commodities, prices for paper held up for quite a lengthy spell. It was inevitable, however, that prices should come down; this soon became pointedly apparent to manufacturers, who, after waiting unrewarded for a drop in raw material took matters into their own hands by reducing quotations on their own product. It did not require much time for raw material producers and dealers to see the "handwriting on the wall" and to follow the lead of consumers in cutting down prices to something nearer to a normal level. Paper manufacturers should feel highly gratified that they themselves were the ones to inaugurate the marking down of prices, and present indications are that they will profit by their action. The fundamental reason for the prevailing business dullness is that consumers have temporarily lost faith in the stability of prices, realizing, of course, that prices on practically all commodities were entirely too high and that declines would necessarily have to come about. As soon as prices on any article get down to more reasonable levels, the probabilities are demand for that article will quickly expand. This has been proven particularly in the textile field, where manufacturing and trading have increased substantially since prices were reduced to a point where buyers are not so fearful to cover their wants and to anticipate future requirements. The same condition will likely develop in the paper market, now that paper prices are getting down to where buyers will regain confidence. In this way, manufacturers should soon benefit by the sharp reductions in price of their product through the obtaining of a larger volume of business.

There has been little important change in the paper market during the week. Quotations in a majority of cases are maintained, and where such changes have occurred, they have virtually without exception been in a downward direction. Demand for any kind of paper or board has broadened but slightly, if at all, consumers and jobbers buy in retail fashion, placing orders only when in immediate need of supplies, and yet signs are not wanting that the lower prices now ruling are commencing to have effect. Inquiry from at least certain sources is increasing, and there is not so much reluctance shown by buyers in meeting the prices asked when they are in want of paper. Furthermore, there are some lines of trade that are beginning to take on a much livelier aspect, which is at least being reflected in the paper industry by buyers exhibiting more interest.

Prices hold generally at around previous levels. Spot newsprint is a little lower, sales down to 6 cents a pound for newsprint in standard rolls having been reported. The spot market is still easy in tone and there is a surplus of supply offered at the moment. On the other hand, the contract basis is well maintained and an interesting development is a statement made public by President Philip T. Dodge of the International Paper Company, in which he says that there will not be any reduction in contract prices of newsprint for some time to come, emphasis being placed on the continued high cost of manufacturing. Some take this prediction of Mr. Dodge as intimating there will be no cut in prices by the I. P. for the second quarter of this year.

The board market has quieted down after having experienced a flurry of buying by boxmakers soon after New Year's. Quotations nevertheless are holding, plain chip board being quoted at $50, or slightly lower, per ton at mills, and filled news board at $55.

GROUND WOOD. — The ground wood market is close to the edge of demoralization. There is no demand of important volume, and aside from transactions involving small quantities of pulp directly needed by buyers, business is practically at a standstill.

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So many prices are mentioned in different corners of the trade that it is extremely difficult to determine what ground wood really is worth. Actual sales of a carload or two have been recorded in certain instances down to $45 per ton at grinding plants, yet dealers declare this price is not truly representative of the market basis, it being stated that leading producers are asking $60 to $65 and that they are refusing to sell at the bottom figures at which "distress" lots are being disposed of. A majority of the trade feel that prices will firm up materially as soon as buyers resume operations on a more nearly normal scale. It is asserted that mechanical pulp sold at $45 and even at $55 and $60 is marketed at a loss to the producer, wihch leads to the belief that prices cannot long remain on such levels.

CHEMICAL PULP. — There is a lack of important activity in chemical wood pulp, and prices display an easy and unsettled tone. The sharp reductions announced early in the month by leading manufacturers have greatly unsettled matters, and quotations are so irregular that it requires a certain amount of guesswork to ascertain what market prices are. Dealers and mill agents themselves frankly say they do not know what pulp is worth, pointing out that it is very hard to locate buyers regardless of the quotations named, and the situation is absolutely devoid of an established price basis. Sellers in most cases are marking time and are doing little offering of pulp, feeling that when consumers really want pulp they will enter the market and that to endeavor to press buyers now would merely serve further to disturb conditions. However, some are trying to move certain stocks of pulp and the prices at which this supply is selling denote broad declines in price. Domestic news grade sulphite has sold at $85 a ton at pulp mills and there have been reports of some sales at this price delivered at consuming points. Domestic bleached sulphite is offered fairly freely at 6.50 cents a pound at pulp mills and some lots have been purchased for and 4.25 cents for foreign, while easy bleaching sulphite is to be had at 5 cents for domestic and 6 cents for imported.

Arrivals of foreign wood pulp at the port of New York this week included 2,195 bales from Rotterdam, 2,131 bales from Kobe and 1,600 bales from Yokohama.

RAGS. — Lower prices obtained on most grades of cotton cuttings used by paper mills, and certain kinds of old rags have decreased in value slightly during the week. No. 1 new white shirt cuttings are offered by dealers at 17 cents per pound at shipping points, new unbleached muslins at 13.50 cents, No. 1 washables at 7.50 cents, new slight silesias at 9 cents, fancy shirt cuttings at 9 cents and new blue overall cuttings at 9 cents. Roofing rags are moving in fair tonnage to some felt mills at a price basis of around one cent per pound f. o. b. shipping points. Old white rags are quotably steady, whereas thirds and blues are in an easy position and can doubtless be acquired at concessions from the price asked by sellers.

PAPER STOCK. — Slight declines in low grades of old paper have featured the market this week. Board mills which for a period of several weeks were moderately active buyers of mixed paper, folded newspapers and similar grades have mostly retired from the market, and as is usual when demand for such descriptions falls off, prices have weakened. Sales of No. 1 mixed paper to mills at 45 cents per hundred pounds at shipping points have been reported, while folded news has sold at 60 cents, No. 1 over-issue news at 90 cents and box board cuttings at 55 cents. High grades are moving in slight amounts and prices in most cases tend off. Offerings of No. 1 hard white shavings to mills at 4.75 cents and of soft white shavings of No. 1 quality at 3.75 cents have attracted few buyers, and purchases could doubtless be made at a quarter of a cent below these figures. Old books and magazines are selling in scattered directions at about 1.50 cents at shipping points.

OLD ROPE AND BAGGING. — Consumers exhibit but passing interest in old rope and bagging, and were it not for occasional sales of light tonnage the market would be at a complete standstill. Prices quoted by dealers range aroud 4 cents per pound on No. 1 domestic manila rope and at about 1.50 cents on No. 1 scrap bagging.

The "Irish Consulate-General", (Trade Dept.), New York City, has advertising in several New York papers directing the attention of American producers and shippers to the Irish market for paper and paper making material. Part of the advertisements contain the following legend: "Ireland purchases every year wood pulp, cardboard, strawboard, printing and newspaper, stationery and show cards at an estimated cost of $4,000,000. This valuable market has been practically an English monoply. Direct shipping between American and Irish ports should stimulate American producers and shippers to secure a share of this profitable trade."

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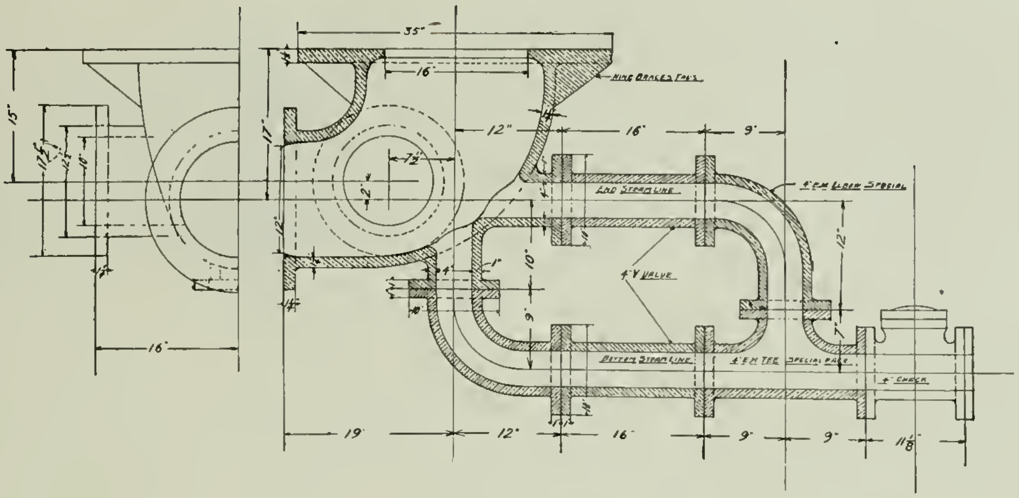

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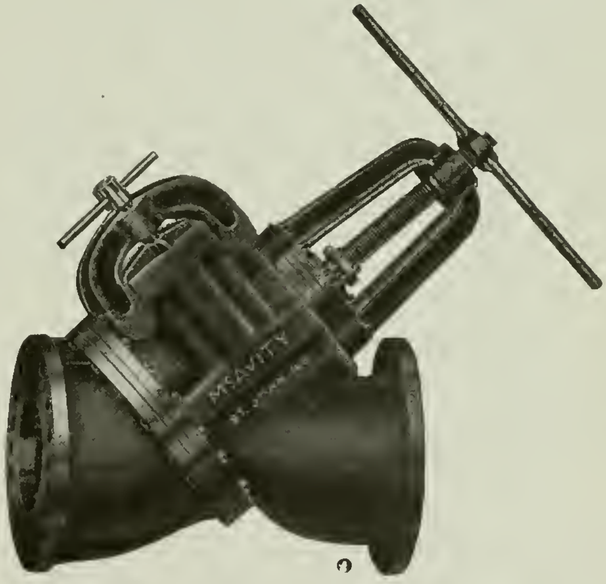

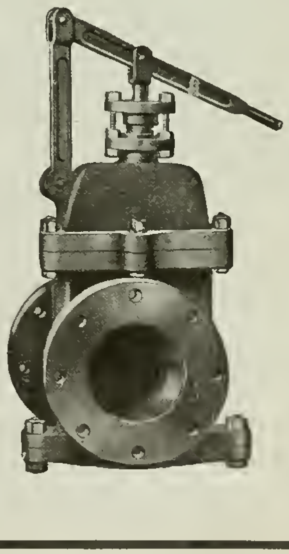

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News from Our Advertisers

ABOUT SECTIONAL DRIVES.

"Sectional Individual Motor Drive for Paper Machines" is the subject of Leaflet 1933, that is being distributed by the Westinghouse Electric and Manufacturing Company, East Pittsburg, Pa. The leaflet describes and illustrates the sectional individual motor drive, which has been successfully developed by the Westinghouse Company to assure increased production, decreased maintenance, greater reliability and durability in machines for the production of paper. The installation at the Gould Paper Company, Lyon Falls, New York, which is equipped with the automatic speed regulating system, is shown in this leaflet. A discussion of the operation of the control is given, together with an outline of its advantages.

WELDING CO. MAKES CHIP SCREENS.

St. Lawrence Welding Company Ltd., 138-140 Inspector Street, Montreal who are well known to the pulp and paper trade as boiler-makers and welders, and more particularly as manufacturers of tanks and dryers, are now manufacturing chip screens.

These welded chip screens are more of 3-16'' iron wire, each and every intersection being welded with a smooth weld. The common mesh used is 3-4'' by 3" long with a clear opening.

They also manufacture a similar type for pulp only with a smaller mesh. They have already turned out over 100 of these chip screens and are now working on a further order for 38. Mr. Barry, the general manager, states that they have lately received several large orders for welded pressure vessels and rivetted tanks and that they have at the present time enough work to keep their plant working at capacity to next June.

E. Forssell who has charge of the Pulp and Paper Department of the American Transmarine Company, Inc., 13 Park Row, New York City, has gone to South America to join the firm of Holmberg, Bech y Cia, Rio de Janeiro, Brazil.

William Beardmore & Company, Limited, whose steel works are at Glasgow and naval construction works at Dalmuir have opened a Canadian office at 285 Beaver Hall Hill, Montreal, in charge of Mr. Breen Kennedy, handling the following lines:—Steel shafting and forgings up to all sizes, small tools, jigs and fixtures, locomotives of every variety (steam, petrol and electric), flanging work of all kinds, sheets, ship and boiler plates and sections, water-tube, Scotch and locomotive boilers, steam turbo, Beardmore-Tosi Diesel and Beardmore crude oil engines, centrifugal and semi-rotary wing pumps.

The Engineering and Machine Works of Canada, at St. Catharines, Ont., report having shipped their first grinder to the Canada Paper Company, Windsor Mills, Que. This delivery is being followed by shipment of six Machines to Wolfe River Pulp and Paper Company, Rivière-du-Loup, Que.

They are also busy on several large orders and prospects are very good for the coming season. Visitors are always welcome at the plant.

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OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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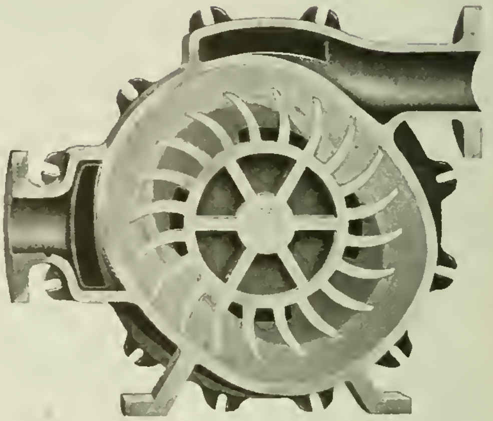

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EDITORIAL

ABOUT BURNING BRIDGES.

We are all familiar with the expression "Burning one's bridges", but this operation is usually supposed to take place after one has crossed the bridge. We occasionally find a case of such blank idiocy as to burn the bridge before crossing. The initials of that person are commonly assumed to be D. F. In the case we have in mind, however, we might add the third initial and call it D. F. G. which for politeness sake we shall say represents the Dominion Federal Government. The Dominion of Canada very largely must look to the product of the forest to pay for such materials as must be imported to be used as raw material for many of our industries or are otherwise necessary. While these are in some cases not major industries their operation is absolutely necessary because we must provide for balanced employment of the population. The forest is everywhere recognised as the back bone of Canada's manufacturing position. It not only provides employment in its mills for nearly thirty thousand people, but engages more than that number in its woodland operations. Further than that our railways, and particularly our Government owned railways, handle a large amount of freight in consequence of hauling both the raw material and the finished product and yet these same railways are causing annually enormous losses because they do not effectively cope with the problem of preventing fires along their right-of-way. An efficient commission, a Government commission at that, is in charge of fire protection along other railways which are required to comply with its order; but the Government's own railways do not come under the jurisdiction of its own commission. This is a most unfortunate and idiotic arrangement and the sooner it can be stopped the longer will be the life of our forests and the better will be the chance for the Government railways to pay their way.

One would not expect a painter to burn down the house he hoped to get the job of decorating.

CO-OPERATIVE RESEARCH IN PRACTICAL FORESTRY.

A curious but very important coincidence occurred during the Convention week of the Canadian Pulp and Paper Association. At exactly the same time that the Technical Section, meeting at the Ritz-Carlton Hotel, was discussing a plan for organizing on a co-operative basis, the research work of the pulp and paper mills in Canada, the Woodlands Section of the Canadian Pulp and Paper Association, meeting at the Windsor, were discussing similar action with regard to experimental work with new methods and apparatus in woods operations. This is most encouraging.

The decision of the Pulp and Paper Association to establish a Department of Research and appoint a director means that individual and disconnected efforts of a number of mills will be co-ordinated and duplication largely avoided, thus making for economy and efficiency. There is a similar situation in regard to the operations necessary in the production of wood, both in the growing and harvesting of the principal raw material of Canada's principal manufacturing industry. Several companies have tried out new types of equipment but few, if any, records are available which give an adequate statement of performance. It is as necessary to have complete and accurate records as it is to conduct an experiment with care. A comprehensive report of procedure and results is necessary for a correct understanding of the circumstances.

The technical men are a bit ahead of the woodlands men, but not so much as the encouragement given them should warrant. The foresters are to be congratulated on the rapid progress they have made in improving the wood situation at its source.

The fact that both sections of the C. P. & P. A. have approved the same method of work on this problem of research is a good argument in its favor. The woodsmen have some points in their program which should be carefully noted by the technical men. The general plan, as approved for a beginning by the Woodlands Section, is outlined in Mr. Anson's fine address which is printed in this issue.

It appears that not enough importance is attached to records of failures. Apparently the speakers, judging from the discussion, want to hear about the successful experiments only. As a matter of fact it is quite as important in any scientific or technical work to know the "how", "where" and "why" of failures. Complete information about them may often point the road to success and, in any case, will warn newcomers off the wrong road. If it is discovered, for instance, that a tractor will not operate on a certain grade or a certain type of road, surely the whole section wants to know that, so as to avoid the difficulties.

Surely, Convention Week 1921 has made a great contribution to the excellent work of the Canadian Pulp and Paper Association. New and important lines of action have been laid out and we may confidently expect next year to bring good reports of progress in the direction of organized research work in both mill and forest.

A FOREST RANGERS' SCHOOL.

One of the finest suggestions that has come forward for sometime was the proposal made at the meeting of the Woodlands Section last month. That the wood using industries, in conjunction with the Province of Quebec establish a Forest Rangers' School was the proposition which started the discussion and it will be well worth the reader's time to turn to another page of this magazine and study the situation as it is there laid out. It is very appropriate that such a discussion should take place at this particular time when the general public as well as of those more vitally interested individually in such problems, are turning their attention to educational matters. The trend of education today is especially strong in the direction of vocational education. Schools where boys can learn carpentry, the machinist's trade, printing and book-binding, and girls sewing, millinery and housekeeping are becoming encouragingly common and the work they are doing is not only enabling these young people to do better work as employees, but they are inspired with greater interest in it because of their greater knowledge of it; and along with their increased efficiency because of their better training specifically for their work they are also developing keener intelligence and a better appreciation of the problems of production, of distribution, of society, and of government. In short, they are becoming better citizens. The improvement in their attitude towards citizenship will be the more marked if care is taken in explaining and emphasizing some of the fundamental opportunities and obligations of a citizen.

An appreciation of responsibility is not all that is required, however, for an efficient discharge of it. A man may be painfully aware of a debt without being able to pay it; a man may also be aware of the problems of production and management without being able to solve or even to study a problem effectively. The appreciation of this circumstance is one of the principal factors in the recent growth of vocational and technical instruction. Most of this development has by far been in connection with industrial centres and factory operations. The paper industry has not been without its influence and in fact has made very considerable progress in its organization of, and contribution to the education of the men in the mill. The industry has even gone so far as to appropriate thousands of dollars for publishing text books for the instruction of employees and the first volume of this work is now available and has met with general interest and praise.

But just as the mill operations have been improved without corresponding attention to the protection of the principal raw material in the forest, so the education of the forester and the woodsman has not received the attention that has been paid to the mental development of the mill man. From a discussion at the Woodlands' Section meeting, we are very pleased indeed to observe a change for the better. Interest is being taken in this important feature and we trust that the seed has been sown for what will eventually be a flourishing educational plant for those whose work is so necessary to the production of our principal manufactured product. A very able committee has been appointed to deal with the matter and the Pulp and Paper Magazine extends them its hearty good wishes and any assistance that can be rendered in their important work. They should find the financial burden lightened by the Federal appropriation for vocational education.

COBWEBS.

Kindly refer to the announcement on the Technical Section page.

Where could that shipment of pulp to New York from Rotterdam have been manufactured, we wonder.

The cost of construction will not interfere with furnishing the main room of that Forest Rangers' School.

It was *rather* unfortunate that such an enormous amount of timber should have blown down in Washington and on Vancouver Island. Reports place the area devastated in Washington as 2,250 square miles and the latter as losing 10 per cent of the best timber. We hope it will be possible to salvage a large proportion of it. In such a case we feel that all fees should be remitted but that the ground be completely cleaned up so as to get reproduction as quickly as possible. Some cheap lumber would be a great blessing.

We are glad to note that Dr. Ruttan has been appointed temporary chairman of the advisory council for Scientific and Industrial Rerearch. He has worked most faithfully in the interest of the project for a Federal Research Bureau, which is provided for in an act that is being introduced by the Government. We hope he will be made the permanent head of Advisory Council. The Research Bureau holds great promise of doing an important work in Canada for the people in the development of our national resources, the improvement of manufacturing processes, and the extension of all our industries.

"Every man who can be a first-rate something—as every man can who is a man at all—has no right to be a fifth-rate something; for a fifth-rate something is no better than a first-rate nothing."—J. G. Holland.

Woodlands Section Does Real Work

The Fourth Annual Meeting of the Woodlands Section of the Canadian Pulp and Paper Makers' Association was held on Wednesday, January 19th, in the Ladies Ordinary Room, Windsor Hotel, Montreal.

The Chairman, Brigadier General J. B. White, presided, and when the minutes of the meeting held in Toronto, Dec. 8th and 9th, had been read and accepted, Mr. G. M. Porter, of the Woodlands Section of the American Paper and Pulp Association, was introduced.

Mr. Porter replied: I represent the Woodlands Section of the American Paper and Pulp Association, and would like to tell you something of what we in the American Section are doing along the lines you people are discussing today.

We have recently sent out questionnaires to all the pulp and paper companies, asking for information regarding their methods of operation, for results where they have experimented with new methods of carrying on their work, for results where new machinery has been installed, — in fact, we asked for detailed information on all the points which are of importance in connection with the woods operations and the management of pulp and paper companies.

These questionnaires are coming back to us now, and we are compiling the very interesting information which is received. When this is done, we will be in a position to be of great use to various companies desiring to instal new methods. For instance, if one company has experimented with the use of tractors, etc., and another company wishes to try them out, too, we will be in a position to give to this company information as to how the experiment has worked out in the other case. In this way, each company will have the benefit of the work carried on and the experiments made by the other companies in the same business. We will get from the companies co-operating in this way, lists of experiments they have tried, and informations regarding them. Our ambition is to develop what might be known as an International Forest Experiment Station, and we hope to have the co-operation of the Canadian Woodlands Section in this matter.

After completing the compilation of information obtained through the questionnaires, we are planning to select a certain number of experiments for which there seems to be the greatest demand, and, with the use of funds contributed by interested companies, we will be enabled to have these experiments carried out to a finish by the companies best adapted to do so. When such experimental work is completed along the definite lines decided upon, the results will be made public to all the members of the Section, or to the industry as a whole. Through Experiment Stations of this sort we hope to develop new ideas which will be of great value to the American Paper and Pulp Association, and I think your Section and ours could get together and do good work for the industry as a whole.

I think the suggestion made at the Toronto meeting was a good one: That was that an International Committee be formed, to consist of two members from your Section and two members from ours, for the purpose of collecting information with regard to experiments being carried out in connection with woodlands operations. This Committee was to prepare a digest of the information obtained, and copies were to be given to the companies supplying the information.

I should be happy to place the suggestion before this meeting for consideration. As I said before, in the American Section we have already started on this work. We have sent out our questionnaires and are compiling the information as it comes in, and I would like to assure you that if you undertake this work over here, you can count upon the entire co-operation of the American Section.

Should Survey Roads for Tractors.

Mr. DeCarteret opened this discussion, as follows:

I would like to say that the meeting held in Toronto in December last was the first meeting of the Woodlands Section, of that kind, which I ever attended, and I got a great deal of good out of it. I found the discussions very valuable. We took up different matters with the men up there, in regard to forestry work in general, and among other things we discussed the various equipment being used at present. Personally, I think the time has come for us to get together in our work and share whatever information we may have obtained from one source or another. At this meeting I would like to get the views of people who have been using tractors. I am sure there are lots of other points we should be able to get together on also.

Mr. Piche added:

I may say that the Quebec Forest Service has been collecting information to some extent, and we have also followed the course of experiments being made in different parts of the province. I understand that along the South Shore a few companies have started out with log haulers — (I believe the River Ouelle Company has been using a tractor). . Some of these companies have been using maps made by foreign engineers, and have found that they could do so to advantage — in fact, it is necessary to have properly made maps for use in this connection. We endeavour to keep in touch with what is going on, the methods being followed, and we endeavour to co-operate with the lumbermen for the benefit of our forests.

We have recently passed new regulations reducing the diameter limit of spruce to 10 inches, and if the condition of the forest makes it necessary to make any further change, or to deviate from the regulations, we would be glad to send our forest engineers to investigate conditions. After such reports are received, we would be glad to make recommendations, and have the necessary Order in Council passed.

We have gone further. It is our great desire to cooperate with the limit-holders, and where we have been informed that companies have in their employ foresters, we have stated that we would accept inventories made by these foresters, provided we can check their figures to some extent. We are all working for the same purposes, and with these new arrangements we will be able to do a good work for the province. I believe that with open discussions at meetings such as this, we will eventually realize the aims we have at heart.

The Chairman said:

Mr. Piché has pointed out the necessity for properly made maps if we are to use mechanical equipment in the forest successfully. We certainly have to have maps to give us the proper grades. We might go into the forest and look at an up-hill haul, and think there would be no trouble at all, — that the grade would be just so-and-so. Then when we get the road cut out, we find the grade is just twice as great as we had thought it was. This sort of thing could all be avoided by having properly trained men in the forests to give us our grades.

PRACTICAL PLAN FOR WOODS EXPERIMENT STATION.

By G. H. ANSON, Abitibi Power and Paper Co.

One of the principal items of the programme was this paper on the need and advantages of some manner of intensively and widely practiced experimental work, conducted in an effort to better the present methods employed in physical woods operations,—and the necessity for the maintenance of standardized, co-ordinated, uniform time study records of this experimental work in a suitable place common and convenient to all; and the outline of two possible plans which, by the adoption of either, would go a long way to bring this about.

Almost every other line of endeavour, such as farming, mining, manufacturing, construction, etc., has been put upon a power and mechanical basis. Every day, and many times a day, new inventions are doing away with man-handling methods. Is it not, therefore, up to us North-Americans, supposedly the equals of any progressive people on earth, to get busy and intensify, by co-operative action, our energies and thoughts to create better methods and tools for the harvesting of our forests? Must we wait for the age of the heatless houses, or some other age, before some one develops power saws, power swamping tools, and other mobile power driven tools of various kinds, — or shall we get together, quit talking, and do it now? If we are willing to admit that we are lagging behind, then the time has come when we can and should get out and make a definite start to alter this condition.

From several sources there have been suggestions offered, that an experimental station be organized, wherein already proposed new devices and methods of timber harvest can be tried out and developed. These suggestions tend to prove, in a measure that a realization of our situation has dawned. If such is the case, then, it is in order to formulate, without delay, plans which will best serve to bring these improved conditions, in a co-operative way. It is with the brief outline of two possible solutions of this situation that the balance of this paper has to deal.

At first glance, the easiest way to accomplish the desired result, namely, an experimental station for trying out tools and methods, would seem to be to organize a sample experimental station. After this has been organized, then assess the member pulp companies and timber operators, a certain sum of money each, based on and acording to the amount of their total annual production. Next, it would be necessary to elect a competent and disinterested party, preferably a technical man with practical experience, to operate this experimental depot.

It should, and would, be encumbent upon this technical man in charge, to surround himself with a competent staff and clerical force; then, to eliminate, as far as possible, any feeling of discrimination which might arise among the contributing parties. It would be further advisable to elect from the representatives of the member companies a governing board whose duty it would be to formulate policies of operation and see that all these, when carried out, would come within the appropriation available, and accruing from the assessments levied on the subscribing pulp and timber operators. These formulated policies should include, among other things, the investigation of new and varied methods of timber cutting, brush disposal, fire protection, log hauling, log loading and yarding, log booms, log towing in open water and slack water rivers, flying, cruising, logging railroads, and the new mechanical tools incidental to the conduct of new methods.

This Board should and would further provide itself with a set of governing by-laws, whereby the functioning of this experimental effort may be properly administered without unnecessary red tape, and these by-laws must and should absolutely define the responsibilities and obligations of this Board in order to eliminate that national, commercial pastime,—"Passing the Buck".

Next, the location of the Experimental Depot must be considered. The depot must be so located that the product of its effort may be utilized and marketed so that it may as nearly as possible be self-sustaining, and, secondly, it should be in a locality where as many different conditions exist as possible, to permit of as many varied experiments as can be tried. Thirdly, its location should further be such that it is easily accessible to the greatest number of subscribers, and their representatives, who will wish to visit it for experience and observations. In a general way, this outlines what must be accomplished to create a simple experimental depot.

Let us now consider, one or two of the disadvantages and difficulties to be encountered in the formation and operations of such an experimental effort.

First, there would be no trouble in securing a charter for such an effort, nor in all probability would there be any difficulty in finding the right type of technical and practical man and the necessary staff and clerical force. No difficulty should be encountered in selecting a suitable board of control from the many bright and progressive men associated with this Section.

The first obstacle now presents itself, namely, the assessment of member companies on a pro rata basis. In experimental work such as is proposed, the tools and equipment are highly developed and are very expensive. For example, the best logging tractors cost approximately $10,000 each; mechanical caterpillar skidding tools, $12,000 each; adequate size flying boats of the modern type, $15,000 to $18,000; wireless phone installations, $1,000 to $2,500 per set; field power generating sets, $2,500 to $5,000; modern logging wagons, $600 each; power tree saws, $1,000 to $1,500 each, and so it goes. This means but one thing — that a very large appropriation is necessary before any real experimental work of value may be done. Under prevailing business conditions, it is doubtful whether this necessarily large amount of money could be paid out of the member companies' coffers. Again assuming that the money was available, it would be a difficult matter, after the money was spent for this equipment, to distribute the various companies' experimental equities for tax purposes and in the event of dissolution of the experimental depot project. However, the first consideration is the main one; the latter of minor importance. Overhead would also be proportionately very high.

The greatest disadvantage of a simple single experimental depot is the limitation of location. It does seem a feasible supposition that one place can be found where all conditions prevail that are encountered in woods operations, nor even a majority exist. Therefore, any experimental effort thus conducted would benefit but a few who possess similar operating situations. This would, of necessity, foster the feeling of discontent among the contributing companies and result shortly in a dissolution of the whole operation, due to the withdrawal of support, which would create a very decided lack of the necessarily large financial appropriation required to conduct the work.

There are several other minor objections, but no time need be taken to discuss them here.

The following is a proposed plan which seems much more feasible, and which is designed to eliminate the objectionable features involved in the idea of a single unit experimental depot. This proposed plan contemplates the organization of an experimental division or department of the Woodlands Section of the Canadian Pulp and Paper Association. In charge of this department, elect a competent technical efficiency engineer, who, in turn, shall surround himself with an adequate staff composed of experienced, time study men, and likewise a sufficient clerical force to handle records as they are assembled, with dispatch.

Next, as in the case of the simple single experimental depot, appoint a governing board who, in addition to formulating the policies for the activities of this department, as prescribed above, shall have the power and jurisdiction of apportioning the amount of experimental effort each of the subscribing companies shall accomplish within a given time, it being understood that no one company shall be called upon by this board to do more or spend more in the doing in a given period, than its pro rata quota. Further, it shall be the board's duty before apportioning this experimental expense and work to an individual member company to ascertain in advance whether the specific experiment to be attempted would here receive its severest test. When all this preliminary work has been done by the board, and the machinery recommended for purchase received on the ground, ready to operate, then the time study men from the experimental department of this section would be dispatched to the seat of the operation and commence an intensive study of the new method, carrying this study on for a sufficient period of time. When their field work was completed, they would return with the resultant data, which would be duly recorded in a standard and comprehensive manner and submitted to the same governing board. If the finding of the board, based on this report, is that the new method is a success, the finding could be printed in a concise form and distributed to the subscribing companies, who then may or may not adopt same, as they see fit. The records could then be filed for future reference. This is all there is to the organization.

Now, let us sum up the advantages of this form of proposed plan;

1st. It is easy to create, by a simple vote, such a subdivision or department of this Section. No charter is necessary.

2nd. Any number of clean-cut efficiency engineers can be had. No particular operating knowledge is necessary, although it would be a further advantage.

3rd. A staff of time study men is easier to procure than technical and practical woods operators, and are less expensive.

4th. It is just as easy to appoint a competent board for this plan as it would be for a single operating experimental depot.

5th. Filing and computing clerks are always available.

6th. Less money is required directly, and this only for technical and clerical work, for which we have standard records shown, properly filed and all in the one convenient place.

7th. The company members who are required to invest in experimental machinery still own this equipment for what it is worth, and can make proper distribution of the expense for tax purposes.

8th. Experiments of a great variety can be carried on under the most exacting conditions simultaneously, and a great amount of knowledge gained in a short time.

9th. The greatest of all obstacles, that of the feeling of discrimination, will be removed, and sincere cooperative effort result, which should make for the permanent support of the work by all, and yield the greatest net results. Therefore, does not this latter plan, with possibly some modifications or additions offer the best, easiest, and quickest way to start this experimental work?

There is undoubtedly much more to be said on this important subject. Possibly there are other and better ways and means to do this thing:—modification, or added ideas to be incorporated in either, or in both of the proposed plans of procedure. But that as it may, —the importance of something intelligently constructive being done along these lines must not be overlooked. I would therefore suggest that, at some proper time during this Convention, a Motion along the following lines be proposed:

> "That a Committee of five, including the Chairman, be appointed by the Chair, to investigate the advisability of immediately creating some manner of Woodlands Experimental Department or Depots, and this Committee shall be empowered to enter into preliminary negotiations with member companies to determine their attitude towards whatever plan or organization this Committee shall select as the best suited to accomplish an efficient Woodlands Experimental Department or Depot, without further delay, in the shortest time."

Gentlemen, this paper was started with the idea of sending it out to different men to get their ideas on the subject. I hope you will consider the whole matter, and see if we cannot come to some definite conclusion in this connection. I know that something of the sort would greatly appeal to myself and to a good many of my associates.

The Discussion.

THE CHAIRMAN: We have all listened with great interest to Mr. Anson's paper, and I think it would be a good idea to have copies made and circulated among the members, in order that they might pick out the various points raised, and study them. I may say that

I am heartily in sympathy with the whole idea, and think that the quicker action is taken along the lines suggested, the better.

MR. ELLWOOD WILSON: Mr. Chairman, I would like to say that I think this idea of Mr. Anson's is a most excellent one. I believe that there are a lot of companies carrying on experiments along similar lines, and they do not know that the same work has been done before, simply because there is no central point from which they can get the information they need. I think that by working out the idea suggested by Mr. Anson, such experimental work being carried on by the different companies could be co-ordinated, and we might get the combined experience of the different companies operating at present. We would hear of various mechanical appliances which have proven to be successful and labor-saving machines, and altogether, I think good would come of it.

Such co-operation might lead to the working out of a uniform woods accounting system, among other things, and this would be of great value.*

I think this is a big proposition and deserves careful consideration. I think we should not plunge into anything leading to a large expense without examining the proposition on all sides and from all angles. I would therefore suggest that a committee should be appointed by the Chair to consider this matter—a Committee from the Woodlands Section of this Association—and that this Committee be empowered to go into the question thoroughly with the American Committee, and that report should be made at the summer meeting of the Canadian Woodlands Section and also at the next meeting of of the American Section.

The summer meeting of the Canadian Woodlands Section will be held on the limits of the Riordon Company, when we get out in the woods, where we belong, and talk things over. The Committee would be able to study everything carefully, and it is too late to do anything this winter, I think the best thing we can do is to get everything ready so that we could commence next fall.

Mr. Chairman, I would like to suggest that a Committee be formed to look into this matter, and that it should consist of Messrs Kenny, Draper, and Anson. These are all good men to go into a matter of this kind: Mr. Anson on account of his technical qualifications, and the other two on account of their long and successful woods experience.

The Chairman added Mr. Wilson's name and the committee was elected.

A FOREST RANGER'S SCHOOL.

By G. C. Piché, Chief Forester, Province of Quebec.

When the Honorable Mr. Taschereau made his first speech as Prime Minister of Quebec, he inserted the remark to the effect that before long a Forest Rangers' School would be established. I may say that I believe the time has come for us to get this idea launched and realized. We have found, and I believe that all operators have found, that in the woods the spirit of the men has changed a great deal. The old lumber jack has gone, and the new men coming into the woods are not like the old ones—they do not work as well. For instance, we find that the scalers are not always absolutely honest. A change should be made. I have thought that if we could educate new blood,—if we could produce a new class of men to take charge of things, to act as scalers, foremen, fire rangers, bush rangers, game wardens, etc., we would solve the problem. I think it would be a good thing for the Woodlands Section to study this matter and discuss the various points in connection with it. I may say that the Legislature is in session at Quebec, and if it is decided, after discussion in this meeting, that the time has come to launch this idea of a Rangers School, we might get an appropriation in the budget of the Department of Lands and Forests, and we could get the school started next summer.

I think it would be well for the government and the lumbermen to co-operate in connection with this school, and I think it would be advisable for this Section of the Canadian Pulp and Paper Association to appoint a Committee to go into the question with the government and discuss the matter thoroughly.

The Discussion.

MR. WILSON: I think the idea an excellent one, and I think it would be much better for such a school to be started under the auspices of this Association, rather than under the direction of the Government.

If the Government starts a Rangers' School, I foresee various difficulties, which could be avoided by having the school run by the industries in co-operation with the Government. If the school were carried on in this way, all questions of language and religion would be obviated; everyone in Canada would be free to attend, and we would have a thoroughly practical school teaching men the duties they would be expected to carry out as rangers, etc.

Rangers' Schools have been started in the United States. There is one in Colorado, and one in New York State, that I know of, and they have been successful. To my mind the training has been rather of a higher grade than the men needed. They were given a lot of theoretical knowledge, but it did not especially fit them for the kind of work to be done. I may say I have employed some of the men from these schools, and have knowledge of these points. I think they carry the idea out better in Sweden, where they have Rangers Schools at which the men are taught a bit of elementary surveying, so that they can pick up old lines and mark out boundaries. They are taught the elements of mathemathics, and to scale logs and do simple calculations. They are given axes and saws to cut down trees, and they are taught to lay out roads, etc.

If we could start a school like that, and it would not cost anyone a great deal when the total would be divided up. I think it would be a fine thing. We could also, as Mr. Piché suggests, take up the matter of getting an appropriation from the Government.

The men trained in the school and passed as competent to carry on the necessary work, could find employment with the Government and with the various companies. If there is any one thing which will make for efficiency in woods operations, it is good, practical training of the men doing the work.

One thing we could do would be to pick out our best men and send them to a school of this sort to be trained during the summer months when we are not busy in the woods. I think it would be a fine thing if a school of this sort could turn out a class of honest scalers and useful foremen. Everyone with experience in the woods knows the lack of any sense of responsibility in the average foreman and scaler. They seem to have no real point of view, and no education. This could be given in a practical way. I don't believe in starting a Rangers' School and trying to turn out foresters. My idea would be to teach these men to handle an axe, saw, and peevy—to have them study the work they are expected to do, so that when they get in the woods they will be worth more to us.

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* The Newsprint Service Bureau is working on this phase of woods work.

I think it would be a good idea to pick out tried men, whom we know, and in whom we see possibilities, and send them to the school, and thus make them more valuable to themselves, to us, and to the Province as a whole.

MR. COOLIDGE (Bangor, Me.?: Mr. Chairman and gentlemen: it is quite a while since I had charge of a Rangers' School, but there are certain points which Mr. Wilson brought out which are well worth emphasizing. For instance, I would like to emphasize the importance of taking men who have been tried and tested. If a school of this kind is thrown open to the public, you don't get suitable men. I think the idea would primarily be to take good woodsmen, and make them more useful, to educate them for scalers and to develop them into foremen's assistants, etc.

I do not think the course needs to be a long one at all, as the men can get a good part of their knowledge through actual practice, but they need to be taught the essential things. I think that this is a very important question, and that a practical Rangers' School would do a lot of good.

In Colorado, where the school was for men in the Forest Service, we had much better results than in another school where the course was open to any boy 19 years' old who thought he would like to be a ranger. In that school they got a lot of town boys without the ambition to work, and who were not at all suitable pupils. I firmly believe it is necessary to pick the men.

MR. HENRY WICKENDEN: In regard to the Rangers' Schools in Sweden, I may say that these are more in the nature of finishing schools for woodsmen, than schools to teach men to handle the axe and the saw. Before the men enter the schools, it is necessary for them to have had a long apprenticeship with companies in operation, and they have to bring tickets from these companies and statements regarding their qualities and qualifications. These are finishing schools rather than schools where the men receive practical teaching such as has been mentioned.

In these schools there are courses covering elementary arithmetic, elementary surveying, and also methods of scaling. Then again there is certain work in connection with logging, culling, and general accounting.

The rangers, when finished, are placed in positions where they are expected to do accounting, etc., and to make careful reports on the distribution of work. These data are collected and are found to be very useful in connection with estimates of costs, etc.

Before entering such a school, I think the ranger should have an elementary education to start on, and be accepted on the recommendation of the companies in the province.

THE CHAIRMAN: I understand it is to educate young men to be scalers, cullers, cruisers, bush rangers, fire rangers, foremen, etc., and to fit them to take on the duties and replace others less satisfactory.

MR. PICHE: At the present time we are turning out forestry engineers, for officers. Now we want rangers, to act as sub-officers. I should think a man would not become a foreman immediately on leaving the school, but that he would take on a job as ranger at first, and then later on he would be fit to be promoted to foreman. I believe that a man who has gone through a course of study, and then works under a good man, would in a short time be able to act as assistant foreman, and eventually as foreman.

MR. KERNAN. If the Rangers' School takes in foremen, it seems to me it would be a very important thing. The foreman spends our money in the woods and he is certainly away beyond the stage of learning to chop trees, etc. I should think we would have to send tried men there.

It seems to me that an important thing would be to teach cullers more about culling and accounting: also something about cost systems, so that they can get their distributions and keep pay rolls, etc. It is very difficult to get a good culler, and it is very important. I think we lose more money through cullers than in any other way.

It should not be very expensive to get a school of this kind going, where cullers and scalers would be admitted. To me, it would not seem important to have the men taught surveying, as that is under the forestry engineer's department. If a line is worth running at all, it is worth running right, and the same thing can be said of all work of that nature. If we want information for use in connection with proposed dams, for instance, we want the right data, and, personally, I do not think a little bit of surveying would be much good. My idea would be to concentrate on culling, scaling, accounting, etc., and I think a school of that sort would be very valuable and could be run very cheaply.

MR. COOLIDGE: I think there is a lot in what Mr. Kernan has said. In the school in the West, to which I referred, the man who got the most out of the course was 89 years old, and had been a woodsman all his life. I don't think it is much use running schools to teach the men to chop and saw. They ought to be beyond that. I think the idea would be to take the men who have shown themselves to be interested and loyal, and teach them the things that they lack.

Another point which I think is important, is that the school ought to be handled as an administrative proposition rather than an educational one. It may not just fill the bill to take young fellows, with the idea of fitting them for the woods. I would say, take tried men and educate them in regard to the things in which they lack efficiency. The question could be asked of the woods superintendent: "What is it your foreman lacks?" or "What is it your sealers lack?" "What would you like these men to get?"— then those men could be taken and trained.

THE CHAIRMAN then named the following Committee to go into the matter thoroughly, and to cooperate with the government, if the Committee reports favorably:

Mr. G. C. Piché, Chief, Forest Service of Quebec;
Mr. R. Kernan, Donnacona Paper Company;
Mr. Ellwood Wilson, Laurentide Company;
Mr. Mack, of the Brown Corporation;
Mr. Arthur Graham, of the Ottawa River Forest Association;
Mr. H. Sorgius, of the St. Maurice Forest Protective Association.

MR. PICHE: I move that the Committee named by the Chairman, with power to add to their number if necessary, be empowered to meet with the Government to make arrangements regarding a Rangers' School as soon as possible and practicable.

At a later point in the meeting, the Woodlands Section passed the following resolution, unanimously:

"RESOLVED that the Woodlands Section approves the formation of a Rangers' School under the auspices of the Section and in conjunction with the Provincial Government; and that a Committee approach the Government in regard to an appropriation."

ELECTION OF OFFICERS.

The following officers were elected for 1921:

Chairman: Mr. L. E. DeCarteret, Brown Corporation.

Vice-Chairman: Mr. W. McE. Bowden, Laurentide Company.

Councillor: Mr. B. F. Avery, Spanish River Pulp & Paper Company.

RESOLUTION ON RAILROAD'S RESPONSIBILITY

The Chairman of the Committee on Resolutions submitted the following:

"RESOLVED, that the Woodlands Section of the Canadian Pulp and Paper Makers' Association, recommend that all railways owned and operated by the Canadian National Railways System be placed under the jurisdiction of the Board of Railway Commissioners, in order that the same fire protective regulations promulgated by the Board for privately owned roads may be carried out thereon."

The Discussion.

MR. WILSON: This Resolution strikes me as being in connection with the most important thing this Section can handle at this particular time. You all know the situation, so there is no use going into detail, but in a few words, the situation seems to be this: The Dominion Railway Commission have taken steps to prevent fires on privately-owned lines, and we are all satisfied with the way they carried out this work. The C. N. R. does not come under the jurisdiction of the Board of Railway Commissioners, and on at least some of its lines the regulations enforced on privately-owned lines are not carried out. The result is that we have had a devastation of the lands along the lines of the Transcontinental. I have travelled over this line from Vancouver to Ottawa, and I am also in a position to say that at the Quebec end of their lines the destruction has been something awful. I want to say that in certain sections, the local officials co-operate with us in the work of fire protection, but the system as a whole has been destroying timber right and left. I may say that I think it is very short-sighted on the part of the C. N. R. because in many places they are burning up the only material they could hope to transport, and the government has been in the anomalous position of trying to prevent forest fires on one branch and setting them on another. I think it is high time something is done to put a stop to this sort of thing.

We have compiled figures showing the number of fires set since 1914 in the Quebec section. We have the number of fires, the numbers of the engines which set the fires, and the areas burned. I may say that two engines last year set 80 fires in one day. One set 34 and one 46. One of the engines was inspected the next day and was said to be in perfect condition.

Another thing I want to mention is that ties are burned whenever the section men take the notion, and the right of way is not properly cleaned up. I must say that the Government railway administration is ruining the forest along the right of way.

The Hon. Mr. Cochrane was approached when he was Minister of Railways, but we got no satisfaction. The present Minister of Railways, Hon. Dr. J. D. Reid, takes the same stand. I see there is present today another member of the Committee which approached the Minister of Railways, and he may tell you of our reception.

The present railway administration has absolutely declined to take the necessary precautions, and there is now only one thing to do: That is, to let the public know the situation and make these men in charge of the railway system see they have certain responsibilities. They have taken the position that they are operating a railway, and have no responsibility to the limit holders:— Let the limit holders provide protection if they want it. The difference between the C. P. R. record, and that of the C. N. R. is so great that any man looking at the figures can see what the situation is.

Privately owned railways give us no trouble now in regard to fires, but the C. N. R. sets fires all through the season and burns great areas of our timber. We have just completed an investigation of the line from Cochrane to La Tuque, and we have pictures showing miles and miles of land destroyed by fires set by the railway. This sort of thing shows a lack of business sense—a lack of ordinary common sense—that is appalling. There is no questioning the evidence of the damage done all along the line from Cochrane to La Tuque. As I say, we have pictures of the whole thing.

I understand that this question is coming up on the floor of Parliament at the next session, and whatever we can do to strengthen the hands of those who will be in this discussion should be done. I think a Resolution from this Section might have a very good influence. The public is beginning to be stirred up, and pressure of this kind should have a good effect.

MR. PAUL G. OWENS: Mr. Chairman, I do not know whether I should speak or not, but I wish to voice my appreciation of Mr. Wilson's remarks. I was present when the Minister of Railways was interviewed with regard to putting the government railways under the jurisdiction of the Board of Railway Commissioners, and the answer given was that the transfer of the G. T. P. was not yet completed, and that nothing could be done until the transfer was complete. Nothing has yet been done.

We had the record regarding the devastation wrought by the government railways; we made the appeal on the ground that the Government should take steps to conserve the resources of Canada: but nothing has been done to bring the government railways into line to work toward that end. I merely wish to emphasize the remarks made by Mr. Wilson, gentlemen, and to say that I am very strongly in favour of bringing the matter before the Government in the manner suggested.

The Resolution was carried unanimously.

DR. RUTTAN.

Temporary Chairman of Research Council.

Ottawa, Feb. 21—Dr. R. F. Ruttan, head of the department of chemistry at McGill University, has been appointed to succeed Dr. A. B. Macallum, as administrative chairman of the honorary advisory council for scientific and industrial research. The appointment, which was made at Saturday's meeting of the council, is a temporary one, made necessary by the impending departure for China of Dr. Mcallum, who some months ago, accepted the chair of bio-chemistry at McGill.

Chemical Reaction in Sizing Paper

BY W. E. BYRON BAKER OF THE YORK HAVEN PAPER CO.

Sizing paper in the beater depends upon the decomposition of rosin size solution in the beater by the action of a solution of an acid or a salt containing a large portion of acid in neutralized form. The size solution consists of sodium resinate with varying proportions of free rosin in suspension, depending upon the amount of soda ash originally used in the making of the size.

Decomposition of the Size Solution

The decomposition of the size solution consists of the liberation of free rosin finely divided condition, which takes place because the soda in the size solution has a stronger affinity for the strong mineral acid in the precipitating agent, because strong bases (e. g. soda) have greater affinity for strong acids than for weak acids, the former being dissociated into ions to a far greater extent than the latter are dissociated.

Two substances enter into sizing by the usual method, using alumn precipitant, namely, free rosin and basic aluminum resinate. This leads us to a consideration of the conditions influencing the character and composition of the size precipitate. It is evident that the precipitant which yields the bulkiest precipitate will be the most desirable from point of distribution of the given weight of size (rosin) among the fibers in the beater, so as to coat each fibre equaly. This is, therefore, a factor in the selection of a precipitant, and is quite as important as the other factor, which is the size precipitating power of the precipitant. The size precipitating power has been found to be practically in direct proportion to the acid concentration.

Other Considerations.

Certain other considerations demand some attention in the selection of a precipitant. Among these may be mentioned the character of the water in the beater, with respect to its alkaline or acid reaction, after the size has been precipitated. In most cases the "backwater" must be somewhat acid in order to insure proper fixation of colors on the fibers and proper running on the paper machine. In certain other cases, e. g., when viscose is also added to the beater for sizing and strengthening, the water should be neutral, or nearly so; in fact, preferably of extremely slight alkalinity.

In addition to the above, it is desirable to take into consideration any effect on the color and strength of the paper which the precipitant may exert. If ferrous suphate did not exert a bad influence in these respects there would not be serious objection to its use as a precipitant. However, in case unbleached sulphite pulp is sized by the use of this precipitant, the iron unites with the residual lignicellulose in the pulp and darkens it considerably. If bleached pulp is so treated the iron reacts in a measure with the rosin, causing another type of discoloration. Furthermore, the strength of the sheet of paper is impaired due to alternate oxidation and reduction of the iron by atmospheric influences, resulting in the destruction of the celluose by the formation of oxycellulose, which is much weaker physically. The same applies to unbleached pulp. In the lowest grade papers this iron sulphate (copperas) may be used in place of alum.

Alum Unexcelled as Size Precipitant.

As a size precipitant alum is unexcelled, everything being taken into consideration. It produces the bulkiest precipitate of all the precipitants to be considered because of the affinity of the basic aluminum compounds for water, and their ability to form highly colloidal and gelatinous precipitates by the absorption of water. In size precipitating power, it is good. It contains in commercial form approximately 40 per cent sulphuric acid anhydride. In practice, however, considerable excess of alum over the theoretical amount is used, as the precipitation is effected more quickly and more completely.

One of the Best Procedures.

As a substitute for alum one of the best procedures is the use of niter cake or sodium bisulphate to replace half of the alum. For every ten pounds alum used ordinarily, use five, and add two pounds of niter cake to make up for the five pound deficit. This procedure most nearly duplicates the results obtained by alum alone, and is to be preferred to any of the following substitution methods, provided, of course, half the original suppy of alum is available.

Nitre cake may be used aone as a substitute for alum, but will not produce nearly so bulky a precipitate, and as a result in order to size the paper to the same desired sizing strength it may be found necessary to increase the amount of size per ton. The quantity of nitre cake necessary to be used is variable, being dependent upon its variabe content of sulphuric acid. Generally one-half the usual weight of alum used will be found sufficient in the case of niter cake. Niter cake, in this case, functions in essentially the same manner as sulphuric acid would function. It is a cheap source of sulphuric acid.

Sulphuric Acid May Be Used.

Sulphuric acid may be used as a size precipitant, but does not produce so bulky precipitate as niter cake. Half as much sulphuric acid as niter cake will be found sufficient.

In the above connections, it must not be forgotten that in some mills, depending upon the character of the pulp, it is impossible to get so hard sized paper as with alum by the application of the above methods. In such cases there is little doubt that the basic aluminum resinate assists considerably in obtaining the desired effect.

Ferrous sulphate is found suitable, provided the defects in color and strength of the paper are unimportant as above noted. The precipitate is more bulky than with fiber cake alone, or sulphuric acid is used. For instance, in a black or gray packing or lining paper, this may be used very satisfactorily. In fact, it has been used by some manufacturers.

Magnesium sulphate and zinc sulphate may also be used. They form bulky precipitates, have a slightly lower size precipitating power than alum, and unlike all formerly mentioned precipitants, they have a neutral "back water" in the beater. This renders them

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*Read at the Fall convention of the Technical Association of the Pulp and Paper Industry, Saratoga Springs, N.Y., Sept., 1920.

specially useful when viscose is added to the beater. In fact, under these conditions they must be substituted for alum. However, when used in the more usual methods of paper manufacture, some form of acidity should be added in the required amount, so as to have the back water acid, the advantages gained being explained in the fourth paragraph of this paper. As a source of acidity we may preferably add niter cake solution or sulphuric acid in the required quantity to make the water faintly acid. Avoid a great excess. The water need not be so acid as is often the case when sizing.

Certain other soluble sulphates could be used, but the prices are prohibitive. The chlorides of the above metals could be used, and hydrochloric acid. All the compounds mentioned as precipitants are approximately the same price or cheaper than alum, taking into consideration the amount which must be used.

It should also be noted that whenever adding any size precipitant greater economy is always experienced by adding it in solution.

WOOD PULP PRODUCTION IN CHILE.

Persons familiar with Chile's timber resources consider this an opportune time to invite the attention of American capitalists to the possibility of developing a wood pulp industry in the southern part of the country, where the islands and mainland are thickly forested. Heretofore it was thought that the remoteness of these timber supplies would make their exploitation unprofitable until such time as more accessible wood pulp material ceased to be available. Under the present conditions, it is believed that the time is at hand to study the Chilean woods and their possible utilization according to modern methods, U. S. Commercial Attache Charles A. McQueen at Santiago reports.

An investigation of Chilean timber was made in 1915 by a special agent of the Bureau of Foreign and Domestic Commerce, whose report is contained in Special Agents Series No. 117, Lumber Markets of the west and north coast of South America. This pamplet may be purchased for 25 cents from the Superintendent for Documents, Government Printing Office, Washington, D.C., or from the district and co-operative offices of the Bureau of Foreign and Domestic Commerce. Later the Madison (Wis.) Forest Products Laboratory of the United States Department of Agriculture made tests of several varieties of woods and cane for the Chilean Government to ascertain their qualities as pulping material. The following samples were selected for the tests: Oliville, laurel, coigue, lingue, roble, and quila,

As published unofficially, the following results were given on application of the chemical soda method: The olivillo produced 38 per cent of pulp with fibres that averaged 2.15 millimters (1 millimeter = 0.039 inch) in length. The pulp was dark in color and 40 per cent of whitewash was needed. If the caustic solution were strengthened, the pulp could be more easily whitened, but the production would be materially decreased. This wood is especially adapted to the manufacture of wrapping paper in its natural color on account of its long fibres. Paper made from this wood averaged 43 pounds per ream of sheets 24 by 36 inches, and showed a strength of 23 pounds per square inch for paper 0.0044 inch in thickness, using the Mullen test.

Laurel contained fibres which were too short and uneven for good results, and did not compare with the other samples submitted.

The coigue produced 42 per cent of pulp and only required 19 per cent of whitewash. The fibres were short, averaging only 0.86 millimeter in length, but the pulp was heavy. Paper for books and other uses could easily be manufactured, provided sulphite of soda were added to the pulp.

Lingue, although appearing to be hard, was easily dissolved. The pulp was similar to that obtained from the coigue, but the fibres, which averaged 1.11 millimeters, were longer, and the pulp obtained had a greater resistance. From these tests it is believed that both coigue and lingue could be reduced to pulp in the same solution, as they require about an equal amount of whitewash.

The roble was easily converted into pulp, which was dark in color, and therefore not recommended for the manufacture of paper.

The quilla is a reed or cane which can be harvested annually and is found in large quantities. Of all the samples submitted for test, it was found to be the best suited to paper manufacture. Three tests of one, one and a half, and three hours were made, all of which were satisfactory. The pulp produced in the shortest time was the most satisfactory, however, as it was clearer and more easily whitewashed. In this test the pulp was pink in color ,and the fibres averaged 2.22 millimeters in length, with a maximum of 2.66 and a minimum of 1.34 millimeters. A whitewash of 35 per cent was necessary, chloride of lime being used as a base. The original cost of production would be low, and the pulp is fibrous enough to make the addition of a sulphite pulp unnecessary. The product was found to be particularly suited to the manufacture of news print without whitewash, or to the manufacture of light book and similar paper if properly whitewashed. The manufactured paper could also be reduced to pulp and used again after being cleaned.

In addition, there are other woods which are said to be equally or better suited to the making of pulp. Among them are the Araucanian pine, which grows on the Cordillera, and is more readily accessible from the Argentine side, and the canelo, a plentiful and rapidly growing tree, which is a good pulper, but dark in color. Tests made of the Araucanian pine are said to have given satisfactory results. The fibres averaged 2.36 millimeters in length and 0.036 millimeter in thickness. A 10 per cent solution of hydrate of soda was used, the proportions being 26 parts of wood to 100 parts of solution. For the whitewashing process 28½ per cent of a 33 1/3 solution of calcium chloride.

The natural location for operation would be the region south of Puerto Montt, the southern terminus of the Central Railway. Between the island of Chiloe and the mainland is a sound which has many well-protected small harbors, permitting the entrance of vessels up to 3,000 or 4,000 tons.

We would recommend dark glasses (goggles) for the city workers since the style for ladies has changed, but we are afraid it would be the same old cry as the saw filers put up—they can't see well with them on.

"Careless habits", says the Safety League, "are like porous plasters—easy to acquire and hard to shake off."

Technical Section Meeting

(Continuation of the Proceedings of the Annual Meeting of the Technical Section of the Canadian Pulp and Paper Association, January 19 and 20, 1921.)

Following the discussion of Reports of Committees as published last week, the Chairman asked if there was any new business to be brought before the meeting.

Revision of membership Qualifications.

Mr. CROSSLEY: Mr. Chairman, there is one thing that I should think should be brought before the meeting of the Technical Section today. That is a question of some change in the Constitution changing the status required for membership.

I would like to cite a little illustration. Not very long ago, as a member of the Educational Committee, accompanied by another member of the Committee, it was our privilege to listen to a discussion of a manuscript on the Paper Machine, by a half dozen paper mill superintendents. We enjoyed the discussion very much, and I asked these gentlemen why it was, when we had a Technical Section meeting we did not have something on the same form of discussion on papers, and the reply was that our meetings were becoming rather too highly technical; that it was difficult to follow some of the discussion because of the language sometimes used.

Now, it seems to me that the Technical Section has, as one of its greatest objects, the advice and counsel of the men who are "Fathers" in industry—men whose voices should be heard in our discussions, and men who perhaps are more able to give us information of a practical nature bearing on the operation of the machinery in mills than I would be able to get from a discussion of a more or less abstruse nature. I think, therefore, that some steps should be taken to modify the requirements for membership in order that there shall be no excuse for the non-membership of the men whose information and experience is perhaps more valuable than any other class of men in the industry, and I take the liberty of putting the motion without commenting upon it any further.

Mr. CARRUTHERS: Mr. Chairman, I believe it is pretty well understood by the majority of the members of the Technical Section that there are many superintendents and practical men who are worthy to be regarded as full members of this organization.

The matter has been discussed informally by the officers of the Section, as you no doubt are aware, and I would be very glad to make this a motion, but I am not sufficiently familiar with the procedure, as to whether a motion is in order or whether a notice of motion should be given, but if it is acceptable as a motion I will be glad to offer it, or if not acceptable, to offer it as a notice of motion, that the third paragraph of our application form for membership in the Technical Section, which says:

> "A member shall be twenty-eight years of age or over, and shall have a technical education of at least the equivalent to the Bachelor of Science decree, etc."

shall be changed so as to read:

> "A member shall be twenty-eight years of age or over, and shall have a technical education of at least the equivalent to a Bachelor of Science decree, or practical experience that, in the opinion of the counsel, shall entitle him to full membership."

I would be glad to make that as a motion, if there are no objections.

If this is acceptable it will do away with the feeling which so many of the practical men have that they do not wish to be admitted into this branch of the organization as Associates; they want to be admitted as full members.

THE CHAIRMAN: Mr. Carruthers and gentlemen. In our bylaws, the Secretary has pointed out to me Article 8 of the Constitution, which says that "Any article in the constitution may be amended by the members present at any regular meeting of the Association by a two-thirds vote of the members present, provided that such an amendment shall be presented to the members in a printed or written notice at least thirty days before such meeting."

"This article may be suspended by an unanimous vote of the members present."

Mr. McInnis: I am not going to make any suggestions, but will just speak to the motion for a moment. I will merely make my statement.

As most of you are aware I am somewhat interested in this question of the practical man and the technical man.

You are doubtless aware there has recently been formed in the United States an organization that I think is of the utmost importance to this industry, known as the "Superintendents' Association."

Now, there was a meeting held at Niagara Falls the first part of this month for the purpose of forming the Canadian Section of the Superintendents' Association, and I understand that meeting was very well attended. At that meeting papers were read and discussed on matters that are of immediate importance to the Superintendents, and also the managers and technical men in this industry. In other words, the problems that came up there were the ones the men were most interested in.

Now, at that meeting, I am informed, it was decided by the Executive Committee to invite the Technical Section to their next meeting.

I think that is mighty good move. I think the practical man needs the technical man just as much as the technical man needs the practical man, and if such an invitation comes forth, I think it would be a mighty good idea for some of the technical men to accept it, seeing that there is such an organization in existence. I also do not see why they should not be invited from time to time at these meetings, and it should be done with the thought that there ought to be some combination between the practical and technical men.

THE CHAIRMAN: Before we can speak to the motion, we will have to have a motion made and seconded and adopted by all the members for the waiving of the provisions of Article 8.

What we are attempting to do — this whole question is looking towards the bringing together of the so called practical man and the technical man. So far, the practical men have not seen fit to join in with the Technical Section to any great extent, and we have, by our by-laws, in a way, ruled him out from active participation in our meetings.

The question, to my mind, is, "Is it a wise move for us to change our by-laws so that he will come in, at first, gradually, but afterwards in full strength?" I have given this thing a great deal of thought. I would like the fullest co-operation between these two sets of men, and, as Mr. Carruthers has said, your Executive Council has informally discussed it several times very recently; in fact, several proposals have been made.

We have in the States a new Association growing up by leaps and bounds. "The Superintendents' Association" which Mr. McInnis has just mentioned. This Association has invaded Canada recently at Niagara Falls. It is rapidly getting a membership from the Canadian Superintendents and practical men. Shall we stand back and allow all of our Canadian operators to be absorbed in into an Association across the line? Or shall we attempt to help the members in forming a similar Association in this country—on this side of the line, which, after a period of years, shall have attained a strength of its own, which will allow it then to co-operate with the Association on the other side, the same as the Technical Section and the Technical Association now co-operate, and then through contact one with the other, the Technical Section and the Superintendents Association, we shall gradually become better and closer friends, better co-operators, and finally, after a period of years,—some five, or six or seven years, united in one strong Canadian section of the Canadian Pulp and Paper Association.

To my mind that is the logical way for its development to take place. If we provide for full membership in our Technical Section for the practical men, the superintendents, the department heads, and so forth, will they then respond in proper numbers and in proper spirit? Since we are already established as a Technical Section, will not the tendency be to have discussions more or less of a technical nature, too technical for the practical man to get the benefits which he should get? Should not the practical men be bound together, first, to grow into a common industry or organization, which can then expend with ourselves gradually, a gradual evolution through a period of years, one co-operating with and teaching the other?

That is my feeling in the matter. It is merely personal to myself, and one suggested at a recent meeting of the Executive Council.

Mr. WILSON: I would like to make a remark on the expression which I have heard uttered here, where there is a distinction between the practical and the technical men. To my mind no man is really a technical man unless he is a practical man, and at the same time, the more or less practical men in the industry have all got to deal with technical problems. So these practical men are all more or less technical men too. I think the tendency is more and more to have superintendents who have technical education At least, if they don't have a start with a technical education, they gradually acquire more or less of a technical education.

Also, in this Superintendents' Association there are a great many men who are technical men, who have the technical education, and, therefore, I do not think these are two different problems.

In our industry there are a great many men who have not the technical education, and yet not entirely solely practical men, and I think it will be of great benefit for this Association for the Technical Section — to have these practical men in here; it is their problems which we are discussing here. If they are part of the industry, they have to be looked upon from a practical point of view.

THE CHAIRMAN: Gentlemen, there are two points here which, I think, should be touched upon. I had a discussion at breakfast this morning about this very unfortunate term, the words "practical men" and "technical men". To my mind, the word "practical" is unfortunate because it seems to reflect on the technical man. The practical man can be just as technical as the technical man himself, and vice versa. The word is used and accepted, and probably never will be gotten away from, however, and we must recognize that the proper meaning of it is somewhat as follows:—The "practical man" as we generally understand it, is the man who has no technical education, and who is in direct charge of operations. The "technical man" is the man who has the technical education, and he may or may not be in charge of mill operations. That is the way we look at it.

Now, the second point we are taking up, is how we can get the practical man more interested in the Technical Section. The question is shall we bar him out through our by-laws, or shall we not. That is not the question. It is, how shall we best get together, through a change in the by-laws or some other way? We all are agreed that the practical man and the technical man should be together in an Association. Now, can that best be accomplished by changing our by-laws, so he will be allowed to come in, or best accomplished by letting him form an Association of his own, which shall ultimately be joined with ours? It is not a question of barring him out. I believe in the proposal spoken of a few minutes ago, we have the best way. That is my personal opinion. It seems to me that we should not bar him out through our by-laws, but at the same time, he should form his own association, and be free to come into ours, but before we can do anything, we must have a motion made and accepted to waive the by-law, and I would call for such a motion before we have any further discussion.

Mr. STADLER: Mr. Chairman and gentlemen: I would, before making that motion to waive the by-laws, express my views. I think they have been expressed sufficiently, but I would emphasize what my personal opinion would be. If, at the present time some people feel that they have not received due consideration in the Technical Section, on account of the wording of the by-laws, my present view would be, by all means to modify the by-laws, and in order to accomplish that, I would move, for the present time, to waive the by-laws.

Mr. BRYANT: I second the motion.

(Carried unanimously.)

Mr. CARRUTHERS: I would move that Article 8 read as follows:—

> "A member shall be 28 years of age or over, and shall have a technical education, of at least the equivalent to a Bachelor of Science decrees. OR PRACTICAL EXPERIENCE THAT, IN THE OPINION OF THE COUNCIL, SHALL ENTITLE HIM TO FULL MEMBERSHIP."

I might say, in connection with this motion, that there is no doubt in my mind that the majority of us have not given sufficient attention to these practical men, and I think we ought to turn over our summer meeting — have two meetings a year — into the hands of these men, and the problems with which they have to deal directly. We must limber up this organization so as to make it more sympathetic. Of course, the question of whether they join another Association or not; that is their business. We can all co-operate with any of our American friends, and I believe we should.

Mr. STEPHENSON: I have pleasure in seconding this motion.

GEORGE CARRUTHERS, Elected Chairman Technical Section

The new opening for these men to get in with us, is, I think, a mighty fine proposition, because, with the new proposal for research work, we are going to need more and more the co-operation of these men, and it is going to be much easier for us to get it, if they are in the family.

Election of Officers.

THE SECRETARY: The nominating committee submits the following names for officers of the Technical Section for the ensuing year.

For Chairman and Vice-Chairman: George Carruthers, Interlake Tissue Mills, Ltd.; R. W. Hovey, Abitibi Power and Paper Company; O. F. Bryant, Laurentide Company, Limited.

O. F. BRYANT, Elected Vice-Chairman Technical Section.

For members of the Council: Messrs. Doctor John S. Bates, Maurice Neilson, Cone Barlow, E. B. Wardle, P. J. Murer, and K. G. Wilen.

Submitted by Committee on Nominations: Messrs. John Stadler, F. A. Sabbaton and J. N. Stephenson.

You will note that it is necessary for the members to check two names under the heading, "Chairman and Vice-Chairman", so the two receiving the most votes and the next largest number, will be the Chairman and vice-chairman respectfully for the coming year. Under the list of names for the Council, three names are to be checked.

THE CHAIRMAN: I would like to point out that the names as submitted were selected by your regularly appointed Nominating Committee, but their selection does not necessarily mean that other nominations are barred out. Any names which you, as individuals, see fit to make are in order. If there are other men whom you desire to have as your officers for the coming year, you are at liberty to vote for them.

I will appoint as Tellers to gather your votes, Mr. Stephenson and Brawn. You may prepare your ballots immediately, and Mr. Brawn and Mr. Stephenson will scrutinize them.

After the ballots were counted the result was reported as follows:

The election, therefore, stands, for Chairman, George Carruthers.

Vice Chairman, O. F. Bryant.

For councillors: Dr. John S. Bates, Mr. E. B. Wardle and Mr. P. J. Murer.

HOWARD SMITH'S RECORD YEAR.

The annual statement of the Howard Smith Paper Mills, Limited, for twelve months ended December 31, last, discloses earnings of the enterprise at a record level, net profits for the year being $1,089,898. This compares with $704, 261 in the 1919 period, the latter figure representing the earnings of the Howard Smith Paper Manufacturing Co for the full twelve months, so that the 1920 increase amounted to $385,657.

After deducting bond interest and preferred stock dividends, which totalled considerably higher than in 1919, owing to the capital reorganization of the company and the acquisition of the Toronto Paper enterprise, there remained a balance of $891,898 applicable to the increased common stock outstanding, or equivalent to 30 per cent on the average of the year.

Concurrently with the mailing of the annual financial statement and the directors' report for the year, a circular announcing new financing on the part of the company is going forward to shareholders. For the approval of the latter will be submitted at a special meeting to be held on March 1 next, a by-law adopted by the directors creating an issue of $7,000,000 seven per cent., 25-year, first refunding mortgage sinking fund bonds. Of this amount it is proposed to issue $1,000,000 at once, the proceeds of which will be utilized to provide additional working capital and means for further extensions.

Don't simply see how you can "put in the day." See how much you can put into the day. — B. C.

R. A. Mc INNIES LEADS ASSOCIATED BOARDS OF TRADE.

That the men of Northern Ontario have every confidence in the possibilities of their country was evident in the inspiring addresses made at the Banquet of the Associated Boards of Trade of Temiskaming held in Cobalt, on Tuesday, 15th February, under the chairmanship of the President Mr. R. A. McInnis, General Manager of the Abitibi Pulp and Paper Co.

Many important facts were emphasized in the course of the speechmaking, not the least being that there is no collision of industry with another, but that all are vital to the north of the Dominion as a whole. A close observer of the proceedings of the meeting of the Associated Boards of Trade would find ample proof of the very real desire for helpful co-operation that exists among the various towns of the north country and their determination that their actions shall be for the benefit of the whole rather than the individual.

Mr. McInnis is a successful manager, unassuming but unafraid, and with an experience of "big business" that will enable him to serve the interests of the North in a manner calculated to add materially to the influence of the Association.

During the course of the evening, speeches were made by Mr. A. T. Brigham, Manager of the Hollinger Mine, who scored to proposed increase in the profits tax as it affects the mining industry. He was followed by Mr. A. L. Dawe, Secretary of the Canadian Pulp and Paper Association, who spoke on the importance of the paper industry in the development of the resources of Ontario and instanced the various mills. He stated that the Abitibi mill at Iroquois Falls was making 70,000 tons of paper every year, and this output will soon be doubled. Every ton consumes a cord and a half of wood. The development of the industry in recent years could be traced to the "wise enactment" of the province of Ontario prohibiting the export of pulpwood from Crown lands. He said the industry felt assured of supplies for many years to come and termed paper the "sinews of civilization." The revenue from Ontario's forest reserves was $1,850,000, or 12 per cent of the total income of the province, last year.

What timber was cut was nothing compared to what was destroyed by fire and disease, said the speaker, who considered reforestation was a task for the Government. He touched on the Swedish system of replacing trees and said the time had come to formulate some such system in Canada.

Mr. Dawe said that 200,000 cords of wood were being sent out of Ontario every year, cut from freehold limits, enough to keep two plants of the size of Iroquois Falls in operation. He declared that inasmuch as these exports are denuding the country of raw materials vital to a "key" industry, an export tax should be imposed, the proceeds of which should be utilized by the Provincial Government in a safe and sane policy of forest protection and reproduction.

Mr. Robson Black, of the Canadian Foresters Association, declared that the forest was the great balance wheel of all constructive activity in Canada. He said that 200 spruce trees went to the making of one issue of the Globe, and that forty million newspapers were issued in the United States and Canada every day. Mr. Black told of steps taken in France, Sweden and Germany to keep this industry permanent, and said that while in the last decade Canada had cut her stock in two, in Germany the resources had been doubled while more timber was taken out than over here.

The speaker said in the habitable portions of Canada eight areas out of every ten were unfit for agriculture, and he declared the conservationist proposed to use the non-farming land for growing trees. There was no collision between the forest and the farm. The forest asks only the land the farm cannot use. Since Confederation a million square miles had been burned up, while only a hundred thousand had been cut by the axe of the logger. Some idea of the trail of the forest fire fiend might be gained when it was remembered that in British Columbia 22 times as much timber fell before fire than before the axe, that in the prairie provinces from one-half to two-thirds of the forests were gone, that Ontario had lost at least half and that Nova Scotia was practically bankrupt in this respect.

It would seem unnecessary to argue for forest fire protection before a gathering in northern Ontario, but such is the perversity of human nature that the experiences of Matheson, Cochrane and other fire smitten areas, that the lessons of those catastrophies have been largely forgotten and painfully little real progress has been made.

The business session of the Association occupied Monday, Tuesday and Wednesday, the agenda sheet containing many important questions for the decision of the delegates. Opposition on the part of the representatives of Cochrane developed at the outset of the meeting, arising from a misconception of action taken by their President Mr. R. A. McInnis in regard to the proposed extension of the T. N. and O. Ry. to James Bay. The President had no difficulty in persuading the meeting to his point of view and the objections of Cochrane were withdrawn.

Mr. McInnis also took the opportunity of impressing on the gathering the necessity of investing the executive council wiht the authority to act on behalf of the Associated Boards of Trade in all cases where immediate action of a joint nature is needed.

Subsequently the meeting confirmed its confidence in this policy by rejecting a motion to ask for a commission to report on the needs of the North and requesting the Executive Council to undertake this work.

TECHNICAL SECTION.

NEW MEMBERS.

Among the new members of the Technical Section are: G. M. Fowler, Dryden Pulp & Paper Co., Dryden, Ont., A. T. Davis, Riordon Co., Hawkesbury, Ont., and A. G. McIntyre, Clark Bros., Bear River, N.S.

Mr. G. W. Dickson has gone to Fort William, Ont. to take charge of the mechanical pulp department of the Fort William Pulp and Paper Co. He had charge of this department at the Laurentide Company before taking his latest position as safety engineer for the Riordon Company.

News From Europe

Experiences in Soviet Russia.

Herr Petersen, an Esthonian citizen, who for five years has been manager of a paper mill at Samara, describes his Russian experiences in the Finnish Paper and Timber Products Journal. The Bolshevist regime began in 1918; the mill of the Bumaga Company in Samara was requisitioned and "nationalized", whereby the "free" sale of paper was stopped. It is perhaps superfluous to relate that Herr Petersen's freedom was stopped likewise, and from 1919 to 1920 he was forced to undergo compulsory labor, that is, clerical work in the office of his former company. Besides confiscating private property, the Bolsheviki butchered many of the owners and sacked their houses. From this situation Herr Petersen was rescued by the peace between Russia and Esthonia. Here are some of the prices at Samara: Butter, 3,500 roubles per lb.; Milk, 1,500 roubles per quart; Beets, 2,000 roubles per poud (about 39 lb.); Potatoes, 6,000 roubles per poud; Sauerkraut, 200 roubles per lb.; Pork, 1,500 roubles per lb.; Fat, 3,000 roubles per lb.; Wheat flour, 17-18,000 roubles per lb.

Owing to the shortage of coal a railway journey from Moscow to Samara, or from Samara to Ufa took three weeks. The trains had to stop for fuel, frequently for days. In Samara, for the same reason, water and electric power were in operation only between one o'clock and midnight.—Finsk Pappers—Travaru—Och Industritidskrift, January 15, 121.

The Paper Markets in France.

Exactly what La Papeterie means in the following announcement must be left to the imagination. "In our number of December 25, 1920, we wrote in our article on the position of the paper market: 'As for certain other countries with a depreciated exchange newcomers in political life and of a commercial mentality *still a little uncertain in its gait,* some experiences, rather unhappy for us, do not permit us to count upon a regular supply from this quarter'. This phrase, as one of our readers has justly remarked, might seem to include, among the countries in question,—one whose commercial mentality, notably in all that concerns trade in pulps, has been above criticism. The makers of Finnish cellulose, as we know, have formed a powerful Association, the Union of Finnish Cellulose Manufacturers which concentrates in its hands all sales of chemical pulp. Two similar associations exists, one for mechanical pulp, the other for paper.

We are bound to say, to the honor of Finnish manufacturers of cellulose, that they have always made deliveries with scrupulous regard to the terms of their contracts, whatever might be the conditions since those contracts were passed, such as the situation, course of prices and exchange at the moment of delivery, and despite the reasons for breaking them which might be invoked. Certainly the pill was sometimes bitter! We will not mention prices which are liable to excite the regrets of French paper makers who, at the same time, were compelled to buy pulp at figures indeed—American.

We learn, at the moment of going to press, that the coefficient of duty increases on newsprint and book paper is about to be abolished. On the other hand a programme is being evolved to prevent closing down of the paper mills and to exploit the resources in raw materials offered by France and its colonies.—La Papeterie, January 25, 1921.

The Timber Industry of Soviet Russia.

What has become of the immense timber resources of Russia under the Soviet regime? According to a French contemporary the question is not without interest, for it is evident that the unhappy state of that country must react unfavorably on the world at large. Unfortunately information as to this matter is vague and unsatisfactory. It is certainly probable that the timber industry of Russia is far less prosperous that the Bolshevik statements, designed for Western consumption, would appear to prove. Under normal conditions, consumption of timber is enormous throughout the country from Archangel to Ekaterinburg. It is known that the Soviet institutions are unable to supply the demands of the railways alone, which require 18 million sleepers, of which only 2,700,000 have been supplied. The sawmills of the Petrograd region are receiving but a tenth part of corded wood which in normal times they procured without difficulty. This district, according to the "Economischeskala Jizn", a Communist organ, has a "capacity of absorption" of 44 million cubic feet; its stocks are now 1,500,000 cubic feet. Apparently the requirements of the Moscow region are figured at 88 million cubic feet, but the quantity which can be transported is not more than 9 million. The proportion in other parts of Russia of the timber needed to what is delivered is never above one-tenth. In the meantime the Bolsheviks have tried forced labor, but inasmuch as this system failed to produce the anticipated results, they have organized a forestry department with skilled workers. But the condition of virtual slavery of these men, together with underfeeding, has eaten grievously into their productive power. Such are the disastrous consequences of Bolshevism.—Le Bois, January 27, 1921.

The American Splendor — A Spanish View.

A writer in "Ergos", the Spanish journal of the paper trade, predicts that the United States are now entering upon an era of industrial strife akin to that in the Old World. "For a long time", he, says, "we have had it dinned into our ears that the development of Yankee wealth and power is prodigious. The facts are patent. Nature has lavished on American citizens energy, respect for law, liberty, fertility of invention, and business "cheek" ("la audacia economica" in the polite original). But we shall not be deceived if we anticipate the economic struggle, from which arise both the prosperity and ruin of nations. Thus in ten years the cost of living in the United States has risen 60 per cent. The cause is the initial strife of all society. On the one hand there are those who sell "commodities"; on the other those who sell labor. Both fight to obtain the largest share in the fruit of this effort. When labor triumphs commodities are cheap and wages are high; the nation prospers. When the sellers of commodities begin to triumph the cost of living increases, and labor becomes cheaper".—Ergos, November 1, 1920. (The writer should study New York, where the wanton disregard of law makes the judicious grieve. As for wages, in the paper industry, at least, their rise seems to increase the cost of everything else).

TECHNICAL ASSOCIATION PREPARES FOR ANNUAL MEETING.

The Executive Committee of the Technical Association of the Pulp and Paper Industry met in New York last week and completed preliminary arrangements for the annual meeting and banquet of the association, which is to be held in conjunction with the annual meeting of the American Paper and Pulp Association at the Waldorf-Astoria and the Hotel Astor, New York, during the week of April 11 to 15, 1921.

The convention will open with informal meetings of the Executive Committee and the chairman of standing committees on Monday, April 11, while the first general session of the association will convene in one of the large meeting rooms of the Waldorf-Astoria at 10.00 o'clock A.M., Tuesday, April 12. There will be the usual welcoming address, followed by the address of the president, reports of standing committees and nominations for officers to serve during the ensuing year. The second general session in the afternoon will be devoted to the reading and discussion of scientific papers.

On the evening of Tuesday, April 12, at the Hotel Astor the annual banquet will be given at which Judge Charles F. Moore will be toastmaster. An attendance of between four and five hundred is looked for at the banquet. Seats at tables will be assigned to suit the wishes of members, who have the privilege of inviting guests. Reservation blanks will be mailed to members with the formal notice of meeting and the secretary hopes that applications for table reservations will be made promptly on receipt of the application forms. Reservations for the banquet of the main association can also be made by members of T.A.P.P.I., who are all eligible to attend.

The third general session of the annual convention of T.A.P.P.I. on Wednesday will feature symposiums on Pulverised Fuel and Steam Economy, conducted by Howard S. Taylor, chairman of the Committee on Heat, Light and Power; and new methods of grinding wood, conducted by the Committee on Groundwood, of which W. E. Munro is chairman. Other symposiums, discussions and special papers for Wednesday and Thursday afternoon will be announced later.

Thursday morning will be reserved for the annual meeting of the American Paper and Pulp Association which will be attended by the Technical Association in a body.

A new volume of "Technical Association Papers" was published last week and mailed to members from the secretary's office. It contains a revised and enlarged paper on tests for unbleached sulphite and sulphate fibers, in addition to the special papers and addresses presented before the Technical Association at the Fall meeting in Saratoga Springs, N. Y., last September. The working principle of the mercury-vapor boiler invented by William Leroy Emmet, of the General Electric Company, is described in the new volume in concise and comprehensive terms, an outline sketch of the apparatus being included. The volume contains a list of the officers and committees of T.A.P.P.I. as well as a directory of members and the text of the constitution and by-laws. Copies of the volume are on sale to non-members at the Secretary's Office, 542 Fifth Avenue, New York, at $2 each.

The next series of "Technical Association Papers," to be published in May or June, will contain a limited number of advertising pages, it having developed that several of the larger manufacturers of machinery and apparatus desire to make announcements through the official journal of the association. The advertising is to be restricted to descriptions of technical apparatus, machinery, and materials used in pulp and paper mills that are calculated to be of interest and value to technical men in the industry. The Executive Committee has ruled that manufacturers of paper be not permitted to contract for advertising space in the association's journal.

The next Fall meeting of the Technical Association will be held at Washington and Philadelphia. An invitation of the American Pulp and Paper Mill Superintendents' Association for a joint meeting with the Technical Association has been accepted, providing the meeting can be held in the latter part of September in conjunction with the regular Fall meeting of the Technical Association. The superintendents' association had expressed a desire to hold the joint meeting in the month of June but there would be difficulty in getting the members of T.A.P.P.I. together within so short a period after the annual meeting in April.

T.A.P.P.I. was well represented at the annual meeting of the Technical Section of the Canadian Pulp and Paper Association to be held in Montreal on Wednesday and Thursday, January 19 to 20, as ten of the twelve delegates appointed were in attendance. The names of the delegates follow: R. B. Wolf, R. S. Kellogg, George E. Williamson, W. E. Byron Baker, Grellet N. Collins, J. A. DeCew, Clark C. Heritage, Kenneth T. King, W. A. Munro, Howard S. Taylor, Ross Campbell, Arthur S. Cosler.

Among recent elections to membership in the Technical Association is that of Dr. Jessie E. Minor, at present head of the pulp and paper department of the Emerson Laboratory, Springfield, Mass. Miss Minor's application received the unanimous approval of the Executive Committee early in January and she has taken her place as an active member with Miss Helen U. Keily, associate chemist of the American Writing Paper Company, these being the only two lady members of the association. Miss Minor holds the Doctor of Philosophy degree in chemistry from Bryn Mawr College and is a B. S. of Drury College.

The Technical Association of the Pulp and Paper Industry is now working in splendid harmony with the American Paper and Pulp Association and sister associations. At the meeting of the Executive Committee last week a series of organization charts was exhibited showing the relations of the affiliated associations to the American Paper and Pulp Association and a resolution was adopted pledging the hearty support of the Technical Association to Dr Hugh P. Baker in his work as secretary of the American Paper and Pulp Association. The association is also co-operating with the Cost Association of the Paper Industry in the production of short, pithy accounts of manufacturing processes involved in the production of typical papers, beginning with the raw materials used and processes and machinery. This is to be done in connection with the decimal classification of papers and boards originating in the Department of Technical Control of the American Writing Paper Company in which ten types of paper and boards are subdivided into seventy-two classes which may be still further divided into one hundred and fifty-six known kinds of paper. An article will be published at an early date showing the possible use of such a classification scheme by manufacturers.

British Trade News

(From our London Correspondent.)

London, 9th February 1921.

I learn that the Paper-Makers Association of Great Britain and Ireland will meet for their annual congress on March 4th in London. It is usually a function round the festive board and it is hoped the President, Mr. Leonard Tod, will preside. As there are many subjects of national interest to be faced by the Association there should be a good attendance.

The Government's Dictionary.

It seems remarkable, but, yet it is true, the Government are preparing a dictionary on paper manufacture. It is somewhat difficult to get any information about it, but I am told on good authority that it will only deal with the different skilled and unskilled positions embraced within the industry and when finished the work will not be made public. Positions like a super-calenderman or a sale clerk have upset Government "knowledge" and now the A. B. C. dictionary is to be introduced for guidance. What surprises one most of all is, how did the Government intervene in labor disputes, when they did not know the actual occupations of the paper industry?

The Pulp Men's Dictionary.

I may assume that if a dictionary is being prepared for the paper industry, the pulpmen will want a section in also. Their statistics are at times very misleading and the pulp importers decided at their annual meeting recently held to approach the proper Government authorities with a view to remedying the present state of things. What is wanted is a proper return of the imports into the United Kingdom during the year and the exact sources from whence the pulp comes. In other words the Government must get out a dictionary of pulps, issue it to the Customs, and give sellers and buyers alike — under its own proper heading — the class and quantity of pulp arriving at the ports. Some people blame the shipping agents, some the importers or agents, but there is one thing certain the Customs issue their return of what comes into the ports and if that return is wrong they are alone to blame.

Paper Statistics.

While on the question of statistics — this is a statistical period — it is interesting to note the alterations made in the returns of paper each month on import and export account in the United Kingdom. There has been what is known as a reclassification on the part of the Government, or, as a commonsense businessman would say, a "complete muddle". This re-shuffle has peculiar elements, and it is extremely hard to get properly classified returns for the information of Canadians. I would suggest now that the Canadian P. & P. A. take up this matter with their own authorities in London and get accurate data and quantities of such items as newsprint, as separate from fine printings, and so on in the classes of papers in which Dominion producers are interested. Before the war there was some attempt at classification, but events since then have evidently changed official tactics.

Wood Pulp Association.

Mr. L. P. Andrews, whose character sketch appeared some months ago in the Pulp and Paper Magazine, has been re-elected President of the British Wood Pulp Association, of which he is one of the original members. Mr. T. T. McCrow supported the resolution of Mr. W. J. Mather that the vice-presidents be re-elected and this was agreed to. Young Mr. Eric Nordberg is still acting as Secretary and Mr. L. P. Andrew's right-hand man and the auditors are Mr. Wm. Greenhalgh and Mr. G. W. Andrews.

There was nothing very interesting to record at the meeting, except a little feeling of despondency. Every man had a doleful tale to relate — and even the ubiquitous contract note was not overlooked. However, times are hard now with pulp men in England and until the new demands of the papermakers made upon them they cannot look too cheerful. But every cloud has a silver lining. The President said a few words about the depression and difficulties they had had to contend with. There was talk of congestion on one side and refusing or revising contracts on the other and his view was that compromise would have to enter into the policy of both sides. He also commented on the exchange question.

Throughout Mr. Andrews held out no hope as to future prospects. He is a keen and shrewd business man and when his views are not too hopeful it may be taken for granted that from a sellers point of view the market and the conditions governing it are not healthy.

Pulp Contracts.

The depression prevailing in the British paper industry has caused attention to be directed to pulp contracts. There is a certain amount of revision going on just now and there is a sort of give and take policy, sellers of pulp showing every consideration for their customers in the present "live and let live" condition in trade. Unfortunately the outlook for paper is still none too rosy and so long as it prevails in this depressed condition pulp men must expect grievances and discontentment, followed by little buying.

In Scandinavia, depression is reported to be very keen and the pulp situation is critical.

Prominent Newspapers Amalgamate.

Owing to the cost of paper and other expenses the London "Pall Mall Gazette" and the London "Globe" have merged. This is an indication of the state of things prevailing in newspaperdom. There are among the oldest papers in England. Another amalgamation has taken place down South. At Plymouth, the "Mercury" has merged with the "Western Morning News," which means that another old and highly respected organ disappears. Apart from the loss in the consumption of newsprint, the merging means considerable unemployment. The recent cost of production has hit some newspapers very hard and, of course, paper comes in for a fair share of the blame.

North of Ireland Paper Mill.

The North of Ireland paper mill made a profit of £31,869 in 1920 and has brought in, £32,587 making the fund £64,458. In July last an interim dividend of 2 shillings was paid per share and the directors now propose a final dividend of one shilling and six pence. The sum of £22,456 has been carried forward. The Sittingbourne paper mill has declared an interim dividend of 9 pence per share.

China Clay Works Sold.

Messrs. H. D. Pochin & Co. Ltd., have sold their China clay works at Burngullow to the Tehidy Minerals Ltd. The capacity of the works is about 20,000 tons per year and Messrs. Pochin & Co. Ltd., had them for over 40 years. Messrs. Pochin will now devote all their energies to their Cornwall mines they still own.

PULP AND PAPER NEWS

A strike inaugurated by the employees of the Beaver Wood Fibre Co. Ltd. at Thorold, Ont., some days ago continues to some extent although the company claims that plant is practically in full operation again and that the strike is broken. The plant is being guarded by a detachment of Mounted Police, although the international union officials have issued orders to local presidents that the unions themselves are to arrest and prosecute any member who commits acts outside the law. The company issued eviction notices to all striking occupants of Beaver board houses and these will be tested in the courts. It is claimed by the men that wages were reduced 30 per cent after a promise of old conditions on resumption of operations. Collective bargaining is also one of the points in contention.

A somewhat dramatic termination of the timber probe in Toronto followed the issue of a writ of injunction by the Spanish River Pulp and Paper Mills Limited asking that the Riddell-Latchford Commission be restrained from making further investigations of the company's affairs. At the last sitting of the commission Justice Riddell made the announcement that nothing more would be done until the jurisdiction of that body had been determined by a court of justice. "We think it would be improper for us to proceed with any part of the investigation so long as there can be any, or the slightest, doubt of our authority to proceed," said the commissioner. The company refuses to produce anything pertaining to their affairs which has not passed between officials of the Government and officials of the company regarding business of the company with the Government and declines to produce any documents relating to the application of September 19th 1919 for the 5,500 square miles of pulpwood made to the Hearst Government, or to the loan of $5,000,000 or $3,500,000 from Peabody, Houghtelling & Co. In a statement issued later an official of the company said that the company's action was entirely due to the fact that they were asked to produce certain papers and documents relating to the business and finances of the company, and to the personal affairs of certain of the officers of the company which had no relation to the subject matter of the enquiry. In this connection it was stated that the private banking and stock transactions of the individuals were to be enquired into. and feeling that the production of documents of this kind were not relevant, but unjustifiable, the company has appealed to the courts to preserve the sanctity of the personal affairs of its officials as well as its own. "It is not that there is, or ever was, anything to hide," stated the official, "but the suggestions made during such investigation might have serious effects upon the credit of companies and individuals without the slightest justification."

W. J. Bell of Sudbury, general manager of the Spanish River Lumber Co. and Mrs. Bell and Percy Wilson and George Gray of the Spanish River Pulp and Paper Mills, Limited, Sault St. Marie, were at the Queens Hotel in Toronto last week.

Mills production of paper from the Crabtree mill of the Howard Smith Paper Mills, Limited, will commence within the next few weeks, the work of installing new paper-making machinery having now been completed. The production from this mill will bring the capacity of the Crabtree plant up to 40 tons per day and will give to the Howard Smith mills a capacity of 100 tons a day.

Stuart Delarus, of Shuter, Herts, England, whose firm makes all the bank paper requirements of the British Isles spent some days in Toronto last week.

It is rumored in newspaper circles in Hamilton and Toronto, although denied by the liquidators, that the Toronto World, a morning paper, which made an assignment some months ago but is still being published, is about to be purchased by the Southam interests, in which event it would be put out as an evening paper. It is known that the Southams are ambitious to owe a string of papers across Canada. They already own the Calgary Herald and the Edmonton Journal and are heavily interested in the London Free Press. They recently secured a controlling interest in the Winnipeg Tribune which absorbed the Winnipeg Telegram.

The Pulp and Paper Magazine is advised that Mr. Thomas Fynes has resigned as Director of the Manouan Pulp and Paper Co., and that the Continental Paper and Bag Mills, of which company Mr. Fynes is Secretary, has no interest, financially or otherwise, in the Manouan concern.

Mr John F. Ferguson, of Holyoke, Mass., was in Montreal and Ottawa, February 2nd to 4th, looking into some new engineering work in connection with the paper industry, and returned very much impressed with the optimistic views in general of the business men in the paper and pulp industry of that district. Mr. Ferguson is a specialist on Steam and Electric Power.

The Wilkinson Paper Co. Limited, have taken over four floors of the premises at 76 Bay Street, Toronto, and have now commodious offices and wareroom space above the main floor. At present only two of the four floors are being utilised.

Mr. A. G. Dugan, chief of the chemical research department of the George H. Mead Co., was in Toronto for a day or two last week.

Mr. A. G. Pounsford, general manager of the Port Arthur Pulp and Paper Company, Limited, was in Toronto last week on the way back after visiting the pulp and paper mills in Michigan, Ohio, Wisconsin and other states where he looked into business conditions generally.

The Chronicle Publishing Company of Peterborough, Limited, has been granted incorporation under the Ontario Companies Act with power to carry on business as printers and publishers. The capital stock is $25,000 and the head office is Peterborough. The provisional directors are David Hardie, Adam Henry Frick, Vincent Edward Crebar and Thomas Tooms.

Mr. John F. Taylor, secretary-treasurer of the E. B. Eddy Co., Hull, Que., spent some days in Toronto last week.

Mr. C. E. French, who for the past year has been connected with the head office of the Howard-Smith Paper Co. in Montreal, has joined the staff of the Toronto office in the Royal Bank Building. Mr. French is an overseas man, having gone to England with the 91st Battalion and later having transferred to the R. A. F. He was employed in the office of the Federal Paper Co., at Montreal, after his return from overseas.

Word from Victoria announces the death in Victoria Hospital of Milton Robert Jennings, editor and general manager of the Edmonton Journal. Deceased was born at Warsaw, N. Y., in 1874 and was educated at Rochester University. For several years he was circulation manager of the Toronto Mail and Empire.

According to the annual statement of the American Sales Book Company, Limited, profits for the year were $602,679, an increase of 40 per cent, the figures a year ago being $427,237. "Although a falling off in business was experienced during the last quarter, the prospects are encouraging for a gradual return to normal volume during 1921", said President S. J. Moore. Total assets are $5,630,536, increased from $5,369,800 last year. While the company's business is conducted in the United States there are a number of Canadian shareholders and the head office is in Toronto.

Mr. John Cunningham, of the Laurentide Company, and Mrs. Cunningham, have gone on a trip to Florida.

The annual meeting of the Interlake Tissue Mills Co. Limited, was held last week at the head office on University Avenue, Toronto, and revealed a good year's business during the past twelve months, with an optimistic outlook for the ensuing year which will be marked by the starting of a new paper making machine, which is now about ready to operate. All the old officers of the company were reelected. Mr. George Carruthers is the President and General Mnaager; Mr. I. H. Weldon, Vice-President and Treasurer and Mr. S. F. Duncan, Secretary.

The annual meeting f the Lincoln Paper Mills Limited, which was to have been held last week at Merritton, has been postponed until February 22. It is stated that there will be no changes in the personnel of the executive officers.

Mr. T. J. MacFadden who has been in the Head Offices of the Diamond State Fibre Company at Toronto for some months is now covering Western Ontario territory for this concern.

NEWSPRINT TAKES A SYMPATHETIC DROP IN PRICE.

During the latter part of last week, the Canadian Export Paper Company announced the reduction in the price of newsprint from (?) to 5½ cents apound. This decision followed almost immediately on the heels of the revision of prices made by the International Paper Company who reduced their price to 5 1/10 cents a pound, bringing the price down from $130 to $114 a ton. The change takes effect at the beginning of the second quarter of the current year and agreements made according to it terminate at the end of the first half of 1921.

At the offices of the Canadian Export Paper Company it was said that the reduction was in line with the company's usual policy to mete out equitable treatment to all their customers. They felt that while production costs were still high, it was only fair for them to fall in line with the general movement to bring prices back to their normal conditions. Moreover, it is pointed out that wages are gradually being lowered which in the long run will compensate any reductions at this period. Besides this, it would not be out of reason to assume that concerns will, at their own expense, go far enough to bring about a feeling of confidence among their customers in order to better the prevailing conditions.

Another factor to take into consideration is the exchange gained by exporters of this country who are paid on the funds of their American clients. This in itself will help to offset many incidental costs relative to the handling of paper from the source of its production to the consumer.

Outside of the Canadian Export Paper Company's action there seem to be no indications of reduction. It is, however, intimated in reliable quarters that the mills represented by the George Mead Company, will take steps in unison with the rest, but no announcement of such a policy appears to be forthcoming until later in the present quarter.

There is some question as to how much benefit the International Paper Company will be able to derive from these reduced prices. The majority of their raw material comes from this country for which they pay Canadian prices plus the rate of exchange, added to which is the cost of transporting consignments of pulpwood from remote quarters to the company's mills. It remains to be seen whether the lower prices will be practical. That, of course, depends largely on general conditions.

The reduction in the price of newsprint is merely the outcome of retarded demand which came along in the wake of the slump that began last autumn. At the time of the crash, production had caught up, or in fact, passed the requirements of the hitherto starved presses. Nevertheless many concerns of all kinds continued their intensive advertising in a mood of desperation; hoping to attract business. This method failed, because the tumble had gained too great a start. They then cut down sharply on all their advertising with the result that the enormous quantities of paper which were being rushed to the publishers commenced to pile up. Orders were not necessarily cancelled, but nevertheless, an accumulation began to take place. Now there is more than enough paper which places consumers in a more independent position. It is not necessary for them to pay prices based on demand which were most severely felt in the spot market during the comparatively recent shortage. This is conceded by manufacturers for which reason they are willing to lower their prices. At the same time no forecast can be given for what the latter half of the year holds out to the paper market. Since advertising is such a remarkable reflector of business conditions it may be very fairly assumed that paper consumption similarly gauges conditions. Therefore, generally speaking, the prices to follow this latest adjustment will be graded according to the conditions of business in that coming period.

Copies of "Technical Association Papers," Series I and II, are wanted by the secretary of the Technical Association of the Pulp and Paper Industry who will pay $2 each for copies in good condition delivered at the office of the association, 542 Fifth Avenue, New York.

Technical Section

REVIEW OF RECENT LITERATURE.

L-7. Apparatus for narrowing or rounding fiber strips. Fr. patent No. 505,687, Turk Gesselschaft m.b.H., Germany. Papeterie, **42**, 878, (Oct. 10, 1920). Same as Can. patent No. 205,369.—A.P.-C.

L-7. Bleaching paper yarns and fabrics. Ger. patent No. 299,651, F. E. JAGENBERG, Dusseldorf, Sept. 1, 1916. J. Soc. Chem. Ind., **39**, 400A, (1920). The material is heated for 7 hrs. in a soln. of hydrosulfite, chlorinated for 6 hrs., soured with a soln. of H_2SO_4 and HCl, thoroughly rinsed with first warm and then hot Na_2CO_3 solns. and then rinsed in water. The treatment is repeated, and the product is obtained almost as white as linen or cotton, without its strength being affected. The finished yarn or fabric resembles cotton.—A.P.-C.

L-7. Apparatus for drying yarn windings, particularly paper yarn. U. S. patent No. 1,330,025, E. JAGENBERG, Dusseldorf, Feb. 3, 1920. J. Soc. Chem. Ind., **39**, 263A, (1920). Yarn windings such as paper yarns on cops, crossed reels, and the like, are dried in an app. comprising an air-tight casing, means for production a current of air through the casing, nozzles on the casing which lead the air current through the cops or cross reels, and means for heating the air current. Valves are fitted over the nozzles, and are opened by means of stems when reels are fitted on to the nozzles.—A.P.-C.

L-7. Process for softening paper yarns and textiles. Ger. patent No. 315,834, C. BENNERT, Grunau, March 6, 1918. J. Soc. Chem. Ind., **39**, 330A, (1920). The material is treated with the decomposition products of proteins such as protalbinic and lysalbinic acids or their salts, alone or in conjunction with other suitable substances. When these substances are added to the dyebaths in which cellulose textiles are to be dyed, they promote the absorption of the dyestuff and give more brilliant shades.—A.P.-C.

L-7.Process for waterproofing paper yarns and fabrics. Ger. patent No. 315,412, H. T. BOHNE A.-G., Chemnitz, Dec. 13, 1916. J. Soc. Chem. Ind., **39**, 292A, (1920). The goods are treated with water-sol. oil and sizing agents. Complete waterproofing of paper is effected by pptg. the oil from its aqueous emulsion by means of the weak acids or acid salts on the fiber, with the simultaneous use of sizing agents. The oils may be added to the pulp in the hollander.—A.P.-C.

L-7. Method and means for the manufacture of artificial silk. Eng. patent No. 142,038, C. L. STULEMEYER, Nov. 5, 1919. J. Soc. Chem. Ind., **39**, 444A, (1920). In forming artificial fibers the jets through which the cellulose solns. are squirted are made of Mo which is not affected by acids and alkalis, and is cheaper and stronger than Pt.—A.P.-C.

R-11. Research problems of the pulp and paper industry. D. C. EVEREST, Sec'y and Gen. Man., Marathon Paper Mills Co. Paper, 11-4, 30, (Aug. 4, 1920). A brief outline of the problems of the pulp and Paper industries which relate to the work of the Forest Products Lab.:—specifications for the purchase of pulp wood; rossing, chipping, drying and baling of wood preparatory to delivery to the pulp mill; utilization of lumber mill wastes; utilization of hemlock bark; investigations of the pulping qualities of various woods; utilization of resinous woods for the manuf. of sulfite pulp; use of liquid SO_2 instead of S; various utilizations for waste sulfite liquor; elimination of pitch from sulfite; study of the fundamental cooking conditions in the soda and sulfate processes; bleaching of sulfate pulp; recovery of waste sulfate liquors; utilization of niter cake instead of saltcake for sulfate liquors; refractories for lining sulfate smelters; recovery of by-products from wood previous to pulping; artificial grindstones; recovery of fibers from whitewater; study of the various factors entering into beating; recovery of paraffin paper, etc.; substitutes for $Al_2(SO_4)_3$; investigations of specialties, e.g., fiber containers, indurated ware, artificial silks, twines and textiles, etc. A strong plea is made for much closer cooperation and support on the part of the industry, as the Forest Products Lab. is working primarily in their interests, and the more information they are given the more complete will their results be.—A.P.-C.

R-11. The development of the Forest Products Laboratory. CARLILE P. WINSLOW. Paper, 26, 28, 30, (July 28, 1920). Address delivered at the Decennial Celebration banquet of the Forest Products Lab., Madison, Wis., July 22, 1920, giving the history of the development of that institution and showing the very great importance of the work being carried out, to the nation as a whole and to the pulp and paper industry in particular.—A.P.-C.

ABSTRACTS OF PATENT SPECIFICATIONS.

A-6; N-6. Fuel. Fr. patent No. 492,991, P. HOUDRY and H. C. BOURDELEAU, France, April 12, 1919. Chimie & Industrie, **3**, 454, (April 1920). The following are mixed hot: dried sawdust 50 p.c., coal dust or coke dust 25 p.c., clay 10 p.c., stearin pitch 5 p.c., coal pitch 10 p.c. The mixt. is kneaded and made into briquettes.—A.P.-C.

B-0; Q-0. Injection of liquids into woods. Fr. patent No. 502,024, Société des Traitements Industriels des Bois et Textiles, France. Papeterie, **42**, 552-3, (June 25, 1920). The wood is subjected to the action of the hot impregnating liquor for a suitable length of time; removed, and then rapidly immersed in a cold bath of the same or of another liquid.—A.P.-C.

G-6. Spray for flat screen. Ger. patent No. 314,379, A/S C. HARTMANN, Christiania. Papeterie, **42**, 553, (June 25, 1920). The sprays are made to oscillate through an angle of about 45°, in such a manner that adjacent sprays reach the extreme positions of their oscillations at the same time but in opp. directions. This insures of the stock being always driven in the same direction.—A.P.-C.

G-6. Rotary screen. Eng. patent No. 130,257. Paper Makers' Monthly J.; Papeterie, **42**, 591-2, (July 10, 1920). A cylinder having a permeable covering is partly submerged in the pulp-bearing water, the pulp being collected on the cylinder while the water passes inside. The shaft of the cylinder is hollow and perforated at suitable points. Tubular trough-shaped arms are attached at the openings and extend almost to the inner wall of the cylinder. As the latter rotates the ends of the arms dip into the water which passes into the cylinder, and it is evacuated through the hollow shaft.—A.P.-C.

K-6. Process for repulping old or waste paper. U. S. patent No. 1,327,590, J. M. BURBY, Webster, Mass., U.S.A., Jan. 6, 1920. J. Soc. Chem. Ind., **39,** 264A, (1920). Also, Worlds Paper Trade Rev.; Papeterie, **42,** 591, (July 10, 1920). Also, Fr. patent No. 503,271, March 13, 1920. Papier, **23,** 132-3, (June 1920). Old paper made from groundwood is converted into chem. pulp by treating with soda, sulfate, or sulfite liquor. —A.P.-C.

K-11. Apparatus for drying paper, pulp, cardboard, fabrics, etc. Ger. patent No. 307,939, H. MALLICKH, Germany. Chimie & Industrie, **4,** 490, (April 1920). The paper, etc., is dried alternately by the cylinders themselves and by a blast of hot air under press.—A.P.-C.

K-11. Process of drying paper. U. S. patent No. 1,290,360, J. O. ROSS, Assignor to B. F. Sturtevant Co., U.S.A. Chimie & Industrie, **4,** 490, (April 1920). The moist sheet passes over drying cylinder, which it leaves as soon as it is sufficiently dry so that it will not break, and the drying is finished by blowing air on the surface of the sheet.—A.P.-C.

K-11. Process for the drying of goods, and especially cardboard. Ger. patent No. 307,963, Maschinenfabrik, Apparateban and A. BOLEG, Hersfeld. Chimie & Industrie, **4,** 490, (April 1920). The substance to be dried traverses one or more drying chambers. There is a main air current which goes through the whole length of the chamber, while secondary currents circulate through only certain portions of the chambers. The secondary air currents may be heated.—A.P.-C.

K-14. Machine for transversely cutting paper in the web. Fr. patent No. 502,,422, CHAS. RENE PASQUIER, France, Feb. 20, 1920. Papeterie, **42,** 548-52, (June 25, 1920); Papier, **23,** 131-2, (June 1920).—A.P.-C.

K-14. Cores for paper rolls. Fr. patent No. 502,232, ELIXMAN PAPER CORE CO., Inc., U.S.A., Aug. 5, 1919. Papier, **23,** 129-30, (June 1920). The cores are made of paper coated on one side with an adhesive and rolled very tightly, the ends being protected by sheet-metal caps the inside and outside diams. of which are the same as those of the bodies of the cores.—A.P.-C.

K-21. Composite felt and process for obtaining same. U. S. patent No. 1,288,158, R. P. PERRY, Assignor to The Barrett Co., U.S.A., Chimie & Industrie, **4,** 489, (April 1920). One or several coats of an impermeable substance such as bitumen is applied to a web of paper which is then dried.—A.P.-C.

K-23. Process for the manufacture of copying paper for sandblast designs. Ger. patent No. 307,919, M. ERMES, Germany, Chimie & Industrie, **4,** 490, (1920). 12 kg. of animal size are cooked in one vessel, and in another vessel 8 kg. of molasses with 7 kg. of potatoes reduced to a pulp and 200 g. of machine oil. The two are mixed while boiling. An ordinary printing paper is dipped in the mixt., dried and coated on one side with chalk. The advantage of this process over previous ones is the fact that no glycerine is required. Moreover, the saving in size is 60 p.c. and it is not essential to use blotting paper. The total economy is claimed to be 70 p.c. The finished paper is elastic and adhesive.—A.P.-C.

L-5. Saccharification of cellulosic materials and recovery of citrate soluble phosphates. Ger. patent No. 305,120, Chemische Fabrik Rhenania A-G and F. L. SCHMIDT and G. A. VORTELIUS, Germany Chimie & Industrie, **4,** 474-5, (April 1920). The concd. acids used for saccharification are utilized to attack raw phosphate Monocalcium phosphate and phosphoric acid are first obtained. The $CaSO_4$ is sepd., and then a fresh portion of raw phosphate is added. There is formed a finely divided ppt. of citrate soluble dicalcium phosphate. If the whole of the raw phosphate is added at the start, the dicalcium phosphate is obtained at once.—A.P.-C.

L-5. Purification of sulfite pulp for nitrating or other purposes. U. S. patent No. 1,283,114, V. DREWSEN, Assignor to West Virginia Pulp & Paper Co., U. S. A., Chimie & Industrie, **4,** 489, (April 1920). The pulp is bleached by treating for 4-8 hrs. with an aqueous soln. of bleaching powder, washed, boiled under press. for several hrs. with an aqueous NaOH soln., washed and bleached again with bleaching powder.—A.P.-C.

FORTNIGHTLY ABSTRACT BULLETIN

At one mill in Canada, the enthusiastic technical men have formed a Science Club. A request from them to the chairman of the Committee on Abstracts and Publications for the opportunity to procure the abstracts in convenient form for filing will result in the reprinting of the Review of Recent Literature in leaflet form. The material as published in the Pulp and Paper Magazine will be reprinted every two weeks as a four page bulletin and indexed consecutively. At the end of the year a certain number of bound volumes of abstracts will be made up, the number depending on the demand. Some members will wish to do their own binding in loose-leaf covers.

The charge for this service will be five cents per bulletin, or two dollars a year (four cents each) where ten or more go to the same address.

WELFARE WORK.

In connection with welfare movement among paper mills and the development of works committees and suggestion schemes, which all come under the one heading of "Welfare". I recently heard of a practise prevailing in a paper mill close to London, which provides a chart, posted on the wall of the machine-room, which those engaged in the production of the mill are requested to study and, if possible, develop the output. The results have been successful, I am informed, and the output displayed in figures month after month has brought great cheer to the mill owners and added interest to the men. The chart is simply arranged for the workers so that they can read the rise and fall of the machine's output each day and then at the end of a certain time, the total production of paper is given by one of the office staff. It would be interesting to know if a similar scheme prevails in the machine room of any of the Canadian paper mills for the workers' inspection. (For the information of our correspondent and others, this idea is now a regular feature of many mills on this side.—Ed.)

UNITED STATES NOTES

Officials of the Howland Pulp and Paper Company, Howland, Me., and the directors of the Advance Bag Company of Middleton, Ohio, have come to an agreement looking to a merger of the two concerns. The arrangement, which is subject to ratification by the stockholders, calls for an authorized capitalization of $1,000,000 preferred and $2,000,000 common stock. The reorganized concern is to be known as the Advance Paper and Bag Company. One of the advantages of the consolidation will be to assure the bag plant an almost inexhaustible supply of raw materials, inasmuch as the Howland Company controls pulpwood areas capable of yielding wood for many years to come. It also owns the water power and sulphite pulp mills at Howland. Most of these properties are new and are considered among the best of their kind in the country. The combination, if carried out, will solve one of the bag company's most pressing problems — that of supplying raw material. In recent months it has been at a great disadvantage due to a lack of such a supply.

Among the bids thrown out by the Congressional Joint Committee on Printing was one on stock for 7,000,000 postal cards, put in by the American Writing Paper Company. President George A. Galliver of the company, who has been in Washington contesting the throwing out of this bid, says he is not discouraged by the action of the committee. He declares that his company will probably enter another bid. Several contracts were awarded when annual bidding was re-opened last week, and the American Writing Paper Company received an order for 2,000,000 pounds of U. S. postal card paper of cream bristol board in 44½-inch rolls at $.038 per pound. The Government is said to be saving more than $19,000 through this contract which was based upon telegraphic bids.

Paper bootlaces, made in Germany, are now arriving in America.

Timberland, 85,000 acres in extent, along the St. John, Big Machias and Allagash rivers in northeastern Maine, became the property of the Allagash Land Company of Bangor, Me., last Thursday, by purchase from H. F. Eaton of Calais. The holdings thus acquired are valued at $42,000,000. The transaction gives the company title to all but one township of the former Eaton properties, 262,000 acres of which, on the St. Croix River, were purchased by it a year ago.

An inventory filed in the probate court, Pittsfield, Mass., shows that the late Franklin Weston, prominent paper manufacturer of Dalton, left an estate of more than half a million dollars.

The Merchants' Association of New York City canvassed business houses in New York during the last few weeks in a poll conducted in connection with its campaign to bring about the adoption of daylight saving throughout the Eastern Time Zone. Leading paper houses included in the poll all registered sentiment favorable to the proposition.

According to a report reaching the Far Eastern Division of the Bureau of Foreign and Domestic Commerce, Chinese chemists have worked out a way of making several of the finer grades of paper from a native straw. The process has been advanced beyond the experimental stage and a mill for the purpose of employing it in actual manufacture is now in operation in Shanghai.

A speaking trip in the interests of the Snell forest conservation bill is on the cards for R. S. Kellogg, secretary of the News Print Service Bureau and chairman of the National Forestry Program Committee. Most of the meetings to be addressed by Mr. Kellogg will be in the Middle West.

All of the striking workers of trades allied with the paper industry involved in the controversy with the Crocker McElwain and Chemical Paper Companies, Holyoke, Mass., returned to work last Thursday, bringing to an end a protracted industrial dispute that had its inception some time ago when the employers sought to put into effect an individual contract system. Indications are that the paper makers, members of Eagle Lodge, will also soon return to work. According to latest accounts, a special committee of the paper makers' union was considering advising the men to go back, pending the drafting of a new agreement.

The International Paper Company has cut the price of news print in rolls in carload lots to 5.7 cents a pound for the second quarter of 1921. Further details are given under "New York Markets".

Edward O. Leadbetter, one of the best known figures in the paper industry in the Middle West, died recently, following an operation at St. Luke's Hospital, Chicago. Mr. Leadbetter in 1875, when but nineteen years old, superintended the opening of the first envelope factory west of the Alleghanies. This was the original plant of the Sewell-Clapp Envelopes in Chicago, now one of the largest envelope establishments of its class in the country. Mr. Leadbetter was 65 at the time of his death. He is survived by his wife, two sons and two daughters.

A countrywide fight on proposed wage reductions in the paper industry is forecast by W. R. Smith, delegate to the recent International Brotherhood meeting at Toronto, who, following his return to Kalamazoo, intimated that a demand for the continuance of the agreements entered into last year would be insisted upon immediately in the Kalamazoo district. Mr. Smith is authority for the statement that the papermakers are going to ask for an increase in pay of from 5 to 10 per cent over the amounts paid last year. Speaking of the Union's position, Mr. Smith said: "We are asking that the scale agreed on for 1920 be put in full force this year. We originally agreed upon a 30 per cent increase for 1920, and some of the mills granted only 20 per cent advance. They will be asked to continue the last year's wage agreement in full. Of course, those mills that have paid 30 per cent increase are not in any way affected by our request." Mr. Smith also disclosed the fact that a very active campaign is now being waged to bring all paper mill workers, no matter what their positions, into the union ranks.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, Feb., 19. — With large stocks of paper of all kinds in the jobbers' warehouses and with a natural tendency toward price-cutting, the paper market is in a more or less demoralized state. Although the unloading movement has not gained any great moment, it is a fact that some jobbers occasionally offer paper at prices below manufacturers' costs. It is on record this week that a Toronto jobber was offered a shipment of kraft paper by a manufacturer's agent at what he claimed was half a cent below the cost of production Incidents of this kind, although rather rare, indicate a desire on the part of some houses to unload their heavy stocks, although price-cutting has not become general and most lines are being disposed of at market prices. Stocks now are larger than at any time since the paper slump set in and mills are having some difficulty in disposing of their tonnages. There is practically no buying and consumers of paper are still holding off in the hope of further reductions in price. Whether these will come or not is a matter for speculation. There are those who say that such lines as books, bonds and ledgers have scraped the bottom and will not go lower while others in the trade argue that these and other papers will decline further before the consumer is tempted to buy. Paper stocks on hand are being disposed of very slowly and by driblets. Orders of a sizable nature are unknown to the trade and the printer is still angling for big business without hooking it. There is a disposition in some jobbing quarters to criticise the mills for the glutted conditions of the warehouses but generally speaking the jobbers are taking the situation philosophically and are prepared to take their losses, for the most part, depending on a proper organization and survey of the trade to get at a fair sales price for the various lines of paper and stick to it.

WRAPPING PAPERS AND BAGS.—The demand for wrapping papers is keeping up fairly well although business is being done on a small order basis. The paper bag business is dull owing to the fact that dealers had big stocks just before prices went down, and the desire to unload in anticipation of a further drop in the market. As a consequence there is a rather small volume of business moving between manufacturers and jobbers.

TWINE.—Twine declined ahead of paper but of late the market has been holding fairly steady, although there has been a big falling off in business since the lively market of six months ago. Jobbers report that they are importing very little twine from the Old Country market, the domestic market readily supplying all demands. Jute twines are quoted at from 20c to 35c per pound, according to grade and size of yarn. Finished hemp twine is selling at from 45c to 65c and mattress twine at $1.00 to $1.25 per pound.

GLASSINE AND GREASE PROOF.—Manufacturers report that there was a bigger movement of these lines during February than in January but that trade generally is quiet as a consequence of the dealers being pretty well stocked up. Glassine is quoted at 30c for bleached and 25c for unbleached and grease proof is selling at 21c for bleached and 18c for unbleached.

TOILIETS AND TISSUES.—Cautious buying and small orders continue to characterize business in light weight papers and trade generally in these lines is quiet. Consumers are holding back with their buying in anticipation of lower prices which have not yet come and may not materialize. No stocks of any size are being carried but the mills are running steadily and so far have been able to dispose of their product. The new machine of the Interlake Tissue Mills at Thorold is being tried out and when some slight changes are made will begin manufacture, which should be in a few days now. It has not yet been decided just what lines the machine will be devoted to. The prices announced for light weight papers on January 24th last remain unchanged.

BOOKS, BONDS and LEDGERS.—Although the mills and jobbers are selling at reduced prices, no fixed price list has yet been arranged, although endeavors are being made to get the trade down to a normal and permanent basis in respect to the prices that are to prevail. The mills report a fair volume of business but the output is moving slowly and with heavy stocks on hand jobbers are neither buying nor selling heavily. Generally speaking, the trade is dull.

NEWSPRINT.—The anouncement by the Canadian Export Company of a reduction in the price of newsprint from 6.50 to 5.50 cents per pound this week, was of considerable interest to the trade and to the stock markets which were under some depression as soon as the drop became known. The reduction in price, although small when the big advance during the past two years is considered, is the first real break in the ascent of newsprint as a commodity and as a market factor it is considered an important item. The new price has not as yet affected Spanish River and Abitibi, whose output is handled by the George H. Mead Company. Last year the Spanish River price was 4.90. A prominent stock broker pointed out that even the 5.50 rate is higher than any company had had for any previous year and that none of the dividends shown by paper companies have been shown on the 5.50 cent basis. It was also pointed out that some half dozen of the Canadian paper companies multiplied their outstanding stock during last year, to as much as five shares for one in the case of Abitibi, which procedure, of course, has greatly increased the amount of money necessary to pay dividends at the old rate as compared with the beginning of last year. The drop by the Canadian Export Company followed a cut previously announced by the International Paper Company.

PULP.—None of the mills are running at full capacity and some are still operating under the handicap of power shortage or ice trouble. There is no fixed market for either chemical or mechanical pulp and what sales are being made are at prices covering a wide range. Pulp is still considered as a falling commodity in respect to price and with the unsettled conditions existing very little more than actual requirements are being disposed of. One mill is known to have offered ground wood as low as $70 a ton and the price today ranges between that figure and $80. Bleached sulphite is quoted at from $135 to $140 and unbleached at $100.

NEW YORK MARKETS.

New York, February 19—(Special Correspondence)—Overshadowing all developments in the paper market this week was the announcement by the International Paper Company of a reduction in its contract price on newsprint for the second quarter of the current year to 5.70 cents per pound f.o.b. mills for newsprint in standard rolls in carload lots. This price compares with 6.50 cents on deliveries during the first quarter, and represents a decline of $16 per ton. The company also gives its contract customers the option of accepting a quotation from April 1 to the balance of the year of 5.50 cents a pound, or $110 a ton, provided they elect to buy their supply for that period instead of on the basis of quarterly price adjustments.

This is the first reduction made in newsprint prices in quite a long time, and, coming from the largest producer of this kind of paper in the United States, is viewed as rather significant. The prices charged contract buyers by the I.P. since January, 1920, are as follows: First quarters, 1920, $90 a ton; second quarter, $100; third quarter, $115; fourth quarter, $130; first quarter, 1921, $130; second quarter, $114.

The cut in the newsprint contract basis was not unexpected in the trade, which because of the numerous rumors going the rounds recently had been led to believe that some such action would be taken by manufacturers. Moreover, conditions in the print paper market of late have been of a character which implied that contract prices would necessarily have to be lowered. Spot prices on newsprint have been steadily dropping until in the recent past they have been below the contract level, and it stood to reason that manufacturers could not continue to quote figures above that at which publishers could buy in the open market. It was therefore generally expected that the contract basis would be reduced for the second quarter, and the announcement of the International to this effect had no other effect on the market than to create much interest on the part of both members of the paper trade and publishers.

Demand for newsprint in the open market is quiet. Most publishers are managing to get along at present with contract supplies without having to buy for spot delivery, and offers of tonnage for prompt shipment are being made at comparatively low prices. Transient buyers are frequently obtaining newsprint in rolls at less than 6 cents per pound, and there is ample proof that a surplus of spot stocks exists. In fact, manufacturers are commencing to cut their production; for example, it was learned today that the International Paper Company's mills at Chisholm, Riley and Livermore Falls, Me., will reduce operations to five-day-a-week schedule next Monday. Continued offerings of newsprint imported from Europe have a weakening effect on the market and it is plain to be seen that there are fairly large amounts of such paper now in this country for which there are at present no buyers.

Prices on box boards have declined sharply. Following a period of moderately active buying several weeks ago, boxmakers and other consumers have again retired from the market, and, in an effort to obtain enough orders to keep running full, mills have repeatedly cut quotations. Sales of plain chip board have been recorded at $35 a ton delivered New York, while filled news board is freely available at $40. These low prices, which some assert are below the prevailing cost of production, are attracting few buyers, however, and demand is narrow. A majority of board plants near New York are reported operating at close to capacity but they are understood to be rapidly catching up with order and unless buyers resume purchasing very soon, will be obliged to curtail their output.

Wrapping papers have eased off a bit further in price. No. 1 domestic kraft wrapping is offered by mills at 8.50 cents per pound, and indications are that buyers could better this price by another quarter of a cent in some quarters. Tissues are moving in small volume but hold generally steady in price. Tissue mills are running at materially reduced schedule as a result of the market depression.

Reports from New England tell of a very unsatisfactory condition prevailing in the fine paper manufacturing centres of that district. Mills, it is stated, are mostly shut down, and those that are operating are working only two or three days a week. Quotations on writing papers hold at about the levels reached following the recent cut of 15 per cent by leading manufacturers.

GROUND WOOD.—Demand for mechanical wood pulp is slack and the market is in a very unsettled condition. There is no established value basis, other than at the low levels at which some producers or dealers are disposing of pulp at a loss to themselves simply to move accumulations. This basis is between $45 and $50 per ton at grinding mills. Actual sales to jobbers at $45 have been noted, and the pulp involved has in turn been sold to consumers at $47.50 and $50 a ton, yet leading members of the trade insist that these figures are not truly representative of the market on ground wood. Many of the large producers, including those in Canada, are quoting $60 to $65 a ton at mills, for prime quality spruce ground wood, and while they are affecting few, if any, sales at this level, they seem indisposed to accept orders at less, it being the general feeling among manufacturers that the market is destined to firm up within the next month.

CHEMICAL PULP.—As would be expected, with paper mills experiencing dullness in their own product and consequently running on greatly reduced scale, demand for chemical wood pulp is of slight importance. In fact, aside from occasional transactions involving small amounts of this or that grade of pulp needed immediately by consumers for filling in contract supplies, business is close to a standstill. In the absence of actual trading of worthwhile character, it is next to impossible to determine what market values are. Producers and importers as a general thing are pursuing a waiting policy in the belief that present conditions cannot last indefinitely, and are mostly waiting for buyers to come to them for supplies. At the same time, offerings are made from time to time of at least small quantities of pulp at sharp recessions in price, and quotations are on such a broad range that one can scarcely figure out the market level.

The latest quotations received from Sweden issued by the selling association in that country, are reported to be 6.10 cents a pound on No. 1 unbleached sulphite, 6.70 cents on easy bleaching sulphite and 5.25 cent on kraft, these prices being on an ex dock basis here and including the importer's profit. Import houses obviously are mostly naming these quotations on pulp for forward shipment from Sweden, and these figures come

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nearer to representing the approximate market levels on foreign pulp than do the prices quoted on spot lots of Scandinavian pulp which holders are desirous of moving.

Imports of wood pulp at the port of New York this week included 200 bales from Christiania and 256 bales from Rotterdam.

PAPER STOCK.—The principal development in old papers this week has been weakness in low grades. This has been brought about by the retirement of most board mills near to New York as buyers, which evidently have requirements covered for a time. Folded newspapers have sold down to 57 1-2 cents per hundred pounds f.o.b. New York. No. 1 mixed papers at 40 cents, box board chips at 50 cents and No. 1 overissue newspapers at 85 cents. High grades also display an easing tone. Soft white shavings of No. 1 quality are offered at 3.50 cents a pound New York with few takers, and No. 1 hard white shavings are readily available at 4.50 cents. Flat stock holds fairly steady at about 1.50 cents at shipping points for No. 1 heavy books and magazines.

OLD ROPE AND BAGGING. — More inquiry is noted for old rope, consuming mills in several instances evincing increased interest, but quotations are unchanged at about 4 cents per pound New York for domestic Manila rope in No. 1 condition. There is practically no call for scrap bagging and offers of No. 1 packing at 1.50 cents and less a pound mostly go begging.

RAGS—Papermaking rags are moving in light quantity toward mills and prices in most cases continue on the downtrend. So few sales of sizable lots are being made that dealers themselves are at a loss to say what rags are worth today, and prices in the main are nominal. After having held comparatively firm for quite a while, old white rags have started to ease off. Offerings of No. 1 repacked whites to mills at as low as 8 cents per pound f.o.b. New York have been noted, and No. 1 miscellaneous packing is readily offered at 6.50 to 7 cents. Old thirds and blues are little wanted and are available at 3.25 cents a pound at shipping points for repacked stock, while old lace curtains have receded in price to 6 cents. Roofing rags are in probably relatively better demand than any other grade and are selling at a basis of about a cent per pound at shipping point for No. 1 packing. New cuttings are tending lower, with offers reported of No. 1 white shirt cuttings at 17 cents per pound, unbleached muslins at 13.50 cents, white lawns at 15 cents, light silesias at 9 cents, blue overall cuttings at 8.50 cents and washables at 7 cents.

*WHERE TO PLANT FORESTS.**

Another Pennsylvania experience is worthy of consideration. It pertains to the planting of cut-over and burnt-over areas. Immediately after vast areas were cut-over and then burnt-over repeatedly, they appeared to be completely devoid of any woody growth of value. Miles of mountain slopes seemed to be without any trace of tree growth. Then, the best informed and most widely experienced foresters agreed that planting was the only available means of restoring these vast unproductive deserts. But the unexpected has happened in many places. Time has shown that nature works in wonderous ways, and that if fires are kept out of forests there will appear upon our hillsides a fair growth of valuable forest trees. It is quite probable that the conclusions about natural forest replacement in the early days of forestry were based upon past experiences, when fires occurred frequently and did not give nature a chance to show its power.

To date almost 23,000 acres have been planted on the State Forests of Pennsylvania, upon sites ranging from abandoned fields, waste places, burned areas, lumbered tracts, Scrub Oak barrens and Fire Cherry and Aspen covered areas, to the underplanting of mature stands. The 1,200 separate plantations established in Pennsylvania during the past twenty years show that planting may be done successfully and economically, and that plantations are relatively safer from fire than any other forest areas because of the interest the public takes in planted trees and the value people place upon them. But great care should be exercised in selecting planting sites, for planting should only supplement natural forest replacement and not work counter to it. In order that planting may be done judiciously the subject of natural forest succession on different sites and in different regions should be worked out thoroughly before planting is attempted. For only then, will it be possible to know what areas should be planted and where it is reasonable to expect the satisfactory natural growth. It is now clear that nature will do more to restore a forest growth on cut-over and burnt-over areas than was formerly anticipated. Consequently, the extent and methods of future planting must be adapted to this new point of view, which will surely hold as forest protection improves.

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*From "Twenty Years of Tree Planting" by Joseph E. Illick, Pennsylvania Department of Forestry, in the Canadian Forestry Magazine, Aug.-Sept., 1920.

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Beveridge Paper Company, Limited, 628 St. Paul St., West, Montreal, who are well known through their mill supply department as dealers in pulp and paper mill supplies have added several new lines recently, among others the Eureka Packing Company, manufacturers of "Ambest" Lubricated Metallic Packing and Ajax Metal Company, manufacturers of "Ajax" Bull Bearing Alloy.

"Ambest" metallic packing is furnished in loose rope form of long strands of non-friction metal which is easily separated to suit any size rod or box thereby doing away with the necessity of carrying a varied assortment of packings in stock.

"Ajax" bull bearing alloy is a general purpose lining metal which, in addition to the advantage of price, is also claimed to have great plasticity and anti-friction properties.

Among the other lines which Beveridge Paper Company, Limited handle through their mill supply department are Plibrico jointless firebrick and high temperature cements, boiler compounds, paints, waterproofing cements, Flintex concrete hardener and vulcanized fibre.

Diamond State Fibre Company of Canada Limited, are moving to larger premises.

The Diamond State Fibre Company of Canada, Limited, are moving into new premises in the Wrigley Building, Carlaw Avenue, Toronto, on or about March 1st. This building is twice as large as their present premises, and will enable them more easily to handle the great volume of business which the constantly increasing demand for Diamond Fibre products has brought about. They are equipping a thoroughly up-to-date show-room for visiting customers where they can inspect Diamond Fibre Products at their leisure from every angle. A private railway siding will facilitate greatly the prompt delivery of shipments. The Diamond State Fibre Company are to be congratulated on the very satisfactory reception of their products which has necessitated enlarging their accommodation.

Trimbey & Allen

This is a new concern that started in the manufacturing of special pulp and paper machinery, with the beginning of the erection of a shop at Glens Falls, N. Y. last June. The machinery being built is that of which Mr. Trimbey and Mr. Allen hold the patent rights such as the Trimbey Automatic Consistency Regulator, a device well known in the mills of the United States and Canada where there are now something over 100 in use, over half of which were sold on repeat orders unsolicited:—The Allen & Trimbey Automatic Continuous Mixing Machine is device to which the various ingredients entering into the finished paper are supplied in solution or liquid form, of a definite consistency controlled by the above mentioned Consistency Regulator, this apparatus then causes to enter the finished mixture the various amounts of the several ingredients for which it is set. The proportions of any or all the ingredients can be changed by the operator at will but once set they remain constant. The control being mechanical rather than manual, the resultant mixture is constantly uniform. The whole apparatus is automatic and as near fool proof as machines are built. Something of the savings in power and labor can be gained from the amount that will be saved in one Canadian mill of two newsprint machines, now using beaters for mixing their stock. Figuring power at $50.00 per H.P. per year and beater room labor at 30c. per hour, the installation of this system will effect a saving of $13,450.00 per year in this mill. This takes no consideration of the savings in maintenance, floor space, and increased production due to a constant, uniform stock mixture. Another device, the invention of Mr. Allen, is for the automatic control of the whole sulphite cooking operation. By experiment, the rate of steaming a digester in order to obtain the best pulp for the purpose desired in the least time is determined, then this apparatus will repeat this rate of cooking automatically with each succeeding cook, effecting a large saving in time, steam, coal, labor and give the thing always looked for in sulphite mill operation, uniform plup. Then too Mr. Allen has devised a Weightometer by means of which the production of pulp or amount used can be accurately weighed or metered, by which acid can be metered, chips weighed into the digester or coal into the boiler plant. Further the Salesman Engineer, Mr. H. D. Wells has evolved an Improved Rotary Sulphur Burner which combines in a very small space, burner, melting tank and combustion chamber, has very large capacity and required less than 1-4 H.P. to operate the largest size. While some concerns are reporting the slowing up of business, that of Trimbey & Allen is growing and booming simply through the inherent merits of the apparatus they are building. Orders are at hand to keep them running to

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capacity well into the Summer with much more on the way.

Besides the business of manufacturing, the services of Mr. Trimbey are in great demand as a white water expert. There are few mills to which he cannot point out where they are sending good money down the river in white water. It is coming also to be a by-word that if you have an unsolvable problem, put it up to Allen and he will start up his pipe and smoke out a solution.

GOOD REPORT FOR PROVINCIAL PAPER

One change was made in the directorate of Provincial Paper Mills, Limited, at the annual meeting held in Toronto on Feb. 16, the name of Charles S. Campbell, of Kalamazoo, Mich., being substituted for W. M. Loveland of the same city. The attendance at the meeting was not large, but those present heard with pleasure of the satisfactory year reported by the company. President I. H. Weldon, in his report, said:—

"During the year there was an abnormal demand for the product of your mills, enabling all plants to run to capacity, and this, with the high values, made our total sales reach the high record of $7,658,176. We have pursued the policy of making our product of a quality and at a price which compels Canadians to buy in Canada. It would be impossible at this time to say definitely what our business will be for the coming year, but intimations from catalogue and periodical publishers would indicate an increased demand. Present commitments, while less than at the corresponding period of last year, are quite satisfactory.

"When organizing the company, provision was made for financing future extensions by authorizing $3,000,000 twenty year 6 per cent. bonds; $200,000 of these bonds have been exchanged for a like amount of bonds that were outstanding against the Port Arthur Pulp & Paper Company, Ltd., thus enabling us to discharge the prior mortgage on the Port Arthur mill; $305,000 of the bonds were sold for cash, the amount being invested in Canadian Government Victory bonds for use when further building operations are commenced.

"During the year we received from the Ontario Government the rights for 21 years to cut pulpwood on an area containing over 1,300 square miles. Now that our supply of pulpwood is assured, we are in a position to proceed with our plans for the extensions at Port Arthur, which include a paper mill."

The profit and loss statement shows profits for the year after allowing for 1921 war tax, of $1,225,775.

During the year some $200,000 was set aside for depreciation on buildings and plant, against $75,000 in the previous year, and after paying preferred dividends and all other charges, there was available for common dividends some $890,903, against $223,408. Some $257,500 was paid in common dividends, against $90,000 in the previous year, and there was a surplus for the year of $633,403, against $133,408 in 1919.

The balance sheet of the company shows a good cash condition. Cash on hand total $315,166, against $110,902, and accounts receivable are set down at $811,600, against $435,612. Victory bonds at market are placed at $396,800, against $15,000. Current assets aggregate $1,791,052, against $1,260,585, and surplus of current assets over current liabilities exceeds one million dollars.

Of course, as all the above comparisons are the figures of the consolidated operations in 1920, against the operations of the paper company alone in 1919, they cannot be taken as actually comparing the same scope of operations, but can only taken relatively.

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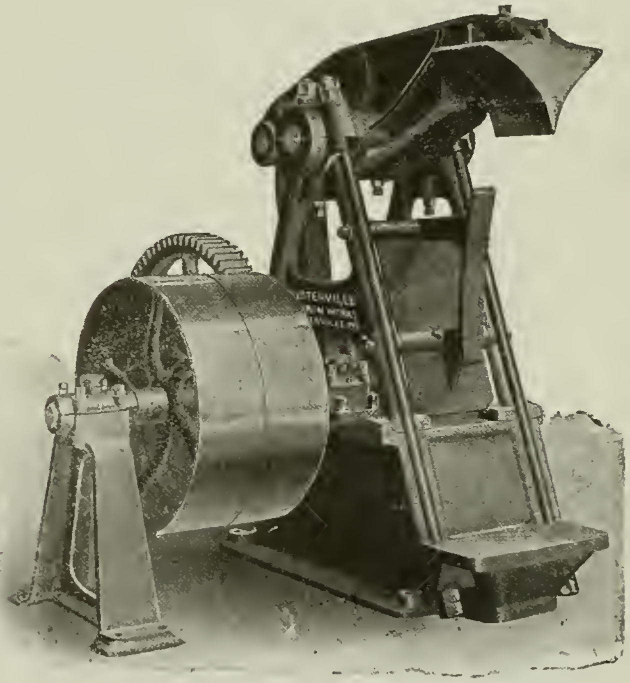

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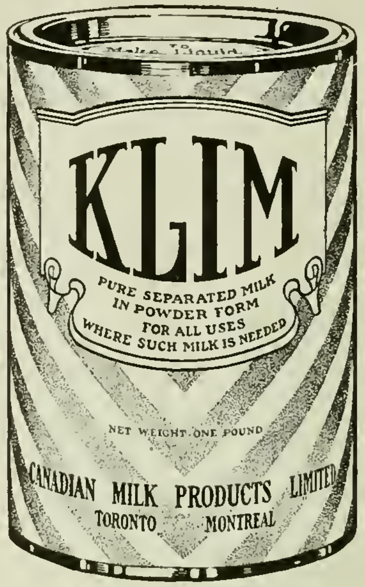
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Export Tax or Embargo on Canada's Fee Land Pulpwood Imperative

By Frank J. D. BARNJUM, Annapolis Royal, N.S.

In the bulletins which I have so far published, I have merely scratched the surface, as I do not wish to create a panic in timber or paper, but the condition of our standing wood supply has now become so alarming that it is time something should be done to awaken the public interest in this vitally important matter and that the people should be apprised as to the tremendous loss that has been suffered through the ravages of the bud-worm in our standing wood supply, which now amounts to a national calamity.

This scourge has swept across the entire Province of Quebec, covering an area of more than seventy-five million acres from the Saguenay River as far west as the Province of Ontario, as far north as the height of land, and as far south as the boundary line of the United States, taking in the entire Province of New Brunswick, causing a loss of approximately one-half its visible supply and has now begun its infestation of Ontario.

In this vast area there are but few sections that have not been visited by this pest. In some spots the loss has been less than others, and it varies all the way from 15 to 100 per cent. Some authorities have said that the fir or balsam growth has not been entirely killed and a portion may recover, but if they will examine these trees closely they will find that immediately on the departure of the bud-worm this growth has been attacked while in its weakened condition by either the bark beetle, bark weevil, ground rot, heart rot, or sap rot. These pests are at work completing the job begun by the bud-worm, so that it is perfectly safe to say that all the fir or balsam growth is doomed in the above area.

The result of this terrific invasion is appalling; for the amount of loss to our timber supply staggers the imagination. Thus far no one has cared to paint the picture as it really is.

The amount of fir or balsam in the above territories south of the height of land in Quebec has always been estimated as running from fifty to sixty per cent. in its ratio to spruce so, calling the stand only fifty per cent. balsam, it means a loss of at least one half of our estimated stand of available pulpwood in the Province of Quebec, or seventy-five million cords, as Quebec's available supply was estimated at one hundred and fifty million cords.

One may figure it in another way by simply calling it a loss of merely one cord per acre on the seventy-five million acres (a figure which no one will attempt to dispute) and you still have the same result, viz., a loss of seventy-five million cords. This means, at the present rate of consumption of all wood products, that about twenty years' supply for the Province of Quebec has been wiped out from one cause only.

What small, scrubby, black spruce growth there is left north of the height of land seems to have been avoided by the bud-worm as too tough a morsel for even a parasite.

Now, passing to a consideration of the arch enemy of the forests, fire, the most recent estimate I have seen from loss by fire along merely one line of our railways, between La Tuque and Cochrane on the Transcontinental, amounts to twenty million cords, sufficient wood to have kept the paper mills of Quebec running for ten years.

There is one compensation, poor as it may seem, with relation to our future wood supply, and that is that the money value of what land and wood we still have left has more than doubled on account of the short supply remaining, and this fact we must not forget in considering present prices for pulp, paper, lumber, and wood.

The newspapers are asking for lower prices for paper, while as a matter of fact the manufacturer of paper and lumber is faced with increasing costs in connection with the protection of his forests from fire and bugs, and the only way this can be met is with higher prices. The bud-worm has destroyed such tremendous areas of standing fir and spruce that the fire hazard has been increased a hundred fold owing to the very large areas of dry dead trees in the woods, entailing a greatly increased fire patrol.

Higher prices for land, pulpwood, lumber, and paper is the only practical conservation that I can see, as it will have the effect of preventing waste in these commodities and will enable the land owner to set aside something to spend for increased fire protection, burning of slash, selective cutting, and reforestation.

The time is now here when a careful burning of slash and debris must be practiced as a measure of protection against insect pests and also as a fire preventive measure.

When timberlands in the East attain a value of $50 per acre, which is less than one-half of what it will cost to reproduce, then and only then will there probably be some check in the enormous waste that is going on in the woods in connection with logging operations.

When paper, which has the distinction of being manufactured from the most rapidly disappearing raw material of any of our manufactured products, attains a price commensurate with its real value, which before this product was manufactured out of wood was about twenty cents per pound, then and probably not till then will the present enormous waste in paper be curtailed.

It matters not to the publishers what the price of paper is, so long as they all pay practically the same, as the cost will simply be passed along to the consumer in any event. The interests of the newspaper publishers and the newsprint manufacturers are one, as they are both dependent on the conservation of our forests.

If this partial picture of destruction is not sufficient to cause our Goverment to put a heavy export tax or embargo on our fee land wood, then the complete story will have to be told.

In the past the only argument against this procedure has been that it would be a hardship to the farmer or fee land owner, as it would prevent him from obtaining the best price for his wood; but this does not apply now, for with Canada's more than one hundred pulp and paper mills, and more building, the home market with its shorter rail haul makes the more desirable market, both for the wood as well as for farm produce. With the enormous loss of wood that our mills have suffered we can now afford to pay just as much for wood as the mills of the United States. As a matter of fact, wood is selling in Quebec as high as it is in Maine. The home market for our farm produce has now also become more important than ever, on account of the customs duties which the United States is piling up against us.

Every mill erected in Canada means another town and just so much more demand for the product of the farm as well as more freight for our railroads, as every car of wood hauled to a paper mill means four additional cars of other material and supplies, which would increase the income of our railroads enormously. It would mean the haulage of five hundred thousand additional carloads of freight if the million and a quarter cords of fee land wood now exported to the States was manufactured in Canada.

In addition to all of the above facts, the item of the difference in exchange is a very important one. When we ship out a cord of wood, there is only a matter of twenty-five dollars left in Canada, while if this cord of wood is manufactured into paper it would leave with us nearly three times as much, or seventy-five dollars. In other words, the million and a quarter cords of wood we shipped out last year left in this country only a matter of thirty-two million dollars, and I am afraid much less. If manufactured into paper this would have enriched Canada to the extent of approximately one hundred million dollars. This means that we have suffered a direct loss of more than seventy million dollars while the indirect loss has probably been much more. This would reduce our trade balance to a very material extent.

Possibly even more important still, especially in times of unemployment like the present, the additional annual employment of the ten thousand men necessary to turn this million and a quarter cords of wood into paper would mean a city of fifty thousand people, or twenty-five new towns of two thousand population each; although, with the enormous expansion we have had and are now having in the pulp and paper industry, we have but a very short supply for many of our present mills and Canada is already over-developed insofar as pulp and paper are concerned. At least some measure of protection must be afforded to mills already built.

No country, no matter how friendly its relations may be will consent to the closing of one of its own most important industries for the sake of supplying raw material to the mills of another country.

I quote from a very significant and timely article written by the Hon. Gifford Pinchot, former Chief Forester of the U. S., on "The Economic Significance of Forestry," in "The North American Review" for February:

" * * * * We are nearly bankrupt, and we do not know it. Because there has always been wood enough to go round, we have placidly assumed that there always would be. Unfortunately, the facts are against us.

" * * * * We are coming to realize that wood is the most universal of all materials, that without wood all production would be impossible, transportation a dream, and business dead.

"Iron, coal, oil, and wood are the four basic materials upon which civilization rests, and of these the most widely employed and undoubtedly the most indispensable is wood. So far as wood is concerned, the human race is still very much in the same position it has occupied since before the dawn of recorded history. No need of body or mind can be met, no instant of our lives can be passed in comfort or well being, without something that only the forest can supply. Nothing we eat or use or wear can be produced, transported, or consumed without the help of the forest. We never could and cannot now get on without it."

" * * * * Before proceeding to touch upon the actual situation of our timber and timbered lands, it may be well to say a word about wood substitutes. In the first place, the use of a substitute almost invariably means the employment of a less satisfactory material at a higher price. In the second place, the increase of our population and industry more than keeps pace with the development of substitutes, so that, for example, more wood is used in building construction than when all houses were built of wood, more for shipbuilding than when there were no iron ships. The use of substitutes does not decrease consumption of wood in any great line of industry."

" * * * * Can we look to the rest of the world for material help when American forest fail? To our very serious danger, we can not.

"The destruction of our timber, and of the timber producing power of lands valuable for no other purpose, would be far less serious than it is if there were other portions of the world from which the absolutely essential lumber supply for our agriculture and industries could be obtained. From the point of view of the gigantic needs of the United States, "Canada has no great supply of lumber, and has already made it plain beyond per-adventure that she purposes to keep what she has for her own development. * * * * "

Extract from Report on U. S. Senate Resolution 311:

" * * * * For a year or more American manufacturers have been apprehensive concerning the possibility of embargo on all pulp wood exports from Canada. * * "

This time has now arrived. With the tremendous loss in our available wood supply it is now no longer a question for international negotiations but it is simply a question of life or death for our pulp and paper industry.

WASTE PAPER BUYS SPORTING EQUIPMENT.

The number of inquiries reaching the Commission of Conservation indicates an increasing interest in the saving of waste paper. Schools are taking up the work, and, in some cities, a friendly rivalry among the school children has resulted in a much larger quantity being secured.

The schools of Vancouver, B.C., have taken the work up with energy, and, during last season, sold over 60 tons. Great interest is shown by the children in this method of obtaining school funds, and the school teachers agree that the work teaches them thrift. The pupils also compete individually in collecting, but all money earned is pooled in the interest of the school. Baseball, basket-ball, cricket and other athletic equipment is purchased for the use of the pupils, and the possession of these outfits tends to promote interschool competitions. School skating rinks can also be supported by these earnings.

Apart altogether from the financial returns, the work is one that is of national importance. The demand upon the forests for pulpwood is enormous, and, while the utilization of mixed waste paper for the manufacture of newsprint is not yet commercially feasible, it is being generally used in making building and roofing papers, box-board, etc.

Technical Section Meeting

(Continued from last issue).

INSURANCE OF PULPWOOD.

THE CHAIRMAN: You all know Mr. Hoxey very well, and know the subject upon which he is to speak, and I will not take up your time in further introducing Mr. Hoxey to you. He will discuss the question of "Insurance of Pulpwood" as based on his article on "Protection of Log Piles by Artificial Fog," which appeared recently in the Pulp and Paper Magazine. Mr. Hoxey referred to the principal points in this form of protection and emphasized the point that protection is the best insurance.

MR. BLAIR: Mr. Chairman and gentlemen: There is not very much that I can say in opening this discussion. The only thing is that there might be a tendency, if companies start wetting down their pulp piles, they will form decay in the pulpwood. I am quite sure that will happen, because I am sure that if wood is piled, as ordinarily stored, it will rot very quickly. There are a few pictures to be shown, which show very clearly what happened at some of the American mills. This wood was stored last June; it seemed to be a very high grade of wood; it was carefully piled, and would be in good condition when the mill came to use it, but only five months after the storing, it showed a large development of fungus in the ends of all the sticks. It was impossible to say in what conditions this wood would be after it was used, but only five months after it was stored, in what was supposed to be the best way it could be piled, there was a very pronounced fungus growth.

MR. STADLER: We were trying to find out something about the wetting of the wood with sprays but the nozzles did not actually arrive until very late in the fall, and so our observations have not been very lucid, to say the least.

Furthermore, I think it is very wrong to give information on a subject, the investigation of which has not been carried to a point where we know what we are talking about. To be frank with you, personally, I do not feel that I can tell you anything positively. I have not the figures with me, but I shall send to those interested, the information we do obtain after we have used our equipment, and it may interest some of you to go into that. We intend putting out some information for general distribution within a very few days.

If I am correct, according to my recollection, one of our nozzles will cover thirty feet square. This is of the regular type. We thought this would be the most economical distribution of the moisture without in any way impairing the pulpwood. Now, in that respect, according to observations we made, the percentage of moisture has slightly increased, and I think Mr. Neilson can better tell you what has been done and the difference in the moisture of the wood.

MR. NEILSON: There seems to be an increase on about one per cent. The average for last year was 45.3 per cent.

MR. STADLER. In making the sulphite pulp it is evident that if you have too much water in the wood, the cooking must be longer.

MR. NEILSON: While I have only a few figures here I wish to emphasize what has been said at this and previous meetings. These figures which I have, are not conclusive. We have found that the best results were obtained if we used three-quarter inch pipe and we have two pipes here, one giving eighty gallons per hour, and the other one hundred and twenty gallons, at sixty pounds pressure.

There was approximately a 36 x 36 area sprayed. This has been going on for a short time only, and we have been taking the wood into the mill from the very part of the log pile that has been sprayed.

We, at the Belgo collect chips in almost the same way as we collect coal for testing moisture, we take the chips through a certain period of the day and put them into a container, and bring it into the laboratory, and test them for moisture. Last year and the year before was the first time that we entirely consumed a log pile, so there were no logs left over for this year.

When we usually had a certain part of the log pile left, the moisture would drop down to about thirty-five per cent and the green wood taken direct from the river usually would have a moisture from 44 to 47 or 48 per cent. The moisture collected in the log pile for 1920 was 44.6 per cent, and during April to June, 43.6 per cent. That is the dryest wood. At the end of May the moisture was 43.6 per cent. During June to September there was given wood coming from the river and the moisture was 46.6 per cent. In September to December, from that part of the log pile which had been sprayed, the moisture was 47.6 per cent. It went up one per cent. During 1921 the first part of the month of January, the moisture has been as high as 49 to 50 per cent. We have some days when the moisture was up to 51 per cent. It was a very high percentage of moisture, and the highest we have ever had in our mills since we started the sulphite mill.

Whether this is due to spraying of the log pile or whether because it was left in the river for a long time, it is pretty hard to say.

Making ground wood out of wet wood is all right, but for making sulphite there may possibly be some difficulty. For instance, we generally have a complete digester cycle of somewhere around eight hours, and did so last October, with the same strength of acid, nearly six per cent total acid. Now, for this month of January we could not do the cooking in less than nine hours and twenty minutes. That makes a decrease in our cooking operations of over twenty per cent.

The moisture in the wood, when over fifty per cent, as Mr. Stadler has said, has penetrated into the fibre and that partly explains, to my mind, why the cooking process has been slowed down.

THE CHAIRMAN: I would like to hear of the experiences at Laurentide. Mr. Wardle, I think, you can say something on that.

MR. WARDLE: I am really in the same fix as Mr. Stadler. We have no real data to put forward at this time. We have had some experiences about getting the spaying nozzles that are like his. We got them about a day after we had to shut the water off because the pipes were freezing up. We have the type that has a plunger working on a spring to keep the nozzle clean. It seems to me that for the ordinary mill, taking water from the river, as we do, the water will have more or less chips in it, and I think some sort of a handy cleaner ought to be provided for the spray nozzle, if we want to use the nozzle. We were not able to get nozzles enough to make any real showing until it was too late to do anything with them.

We had, perhaps, a dozen altogether working days and nights for six weeks before the season got too cold. We kept on through the summer time, as long as any blocks were going on the pile, and we kept a two and one-half inch hose going steadily night and day, whether it rained or not, including Sundays, of course. One of the crews went on the top of the bridge, about one hundred and twenty feet above the ground, and the other crew was down on the ground, and the hose connected with our hydrant out-let, to which was attached about two hundred and fifty feet, or so, of pipe.

About the middle of December we got a letter from Mf. Hoxie and Professor Keay, and had some samples taken from our pile, by the Wood Mill Superintendent. I think there was something like ten or a dozen samples. They averaged about seven or eight inches perhaps in diameter. These blocks were carefully weighed and dried at a constant temperature, and we found we could not detect any difference whatever, although they had been sprayed under the rain and under the hose. I remember in one extreme corner of the pile, some on the top went from twenty-five to thirty per cent, and some of the analyses went up as high as fifty-five per cent. We gave up, with the little data we had, trying to draw any deductions.

We have kept on making a lot of tests, but we want to go about it in a more systematic way before sending out any information whatever.

We need some three hundred and fifty to four hundred nozzles to cover the pile. I base a thousand square feet to the nozzle, or with thirty feet centres, roughly, each way. We are figuring on trying out next some sort of a system for covering the pile absolutely, by means of these spray nozzles, but the trouble we anticipate is the nozzle blocking up and our having to get them cleaned, and on a hundred and twenty foot pile there is no chance of getting at the nozzles. It means the nozzles will have to be uncoupled, and tied with a rope and let down like a swing until they can be reached and cleaned out or renewed.

Apparently the wetting by the hose system was thorough. I do not believe there was any question about it. We could, at any time during the summer, go inside the pile and get a thorough drenching there, showing the water was going through the whole pile from the top to the bottom, and apparently well distributed.

We have never seemed able to keep enough wood in the pile long enough to let the fungus grow on it.

THE CHAIRMAN: Unfortunately for this meeting this whole subject is new, and as been shown by the previous speakers, the data is yet lacking in much detail. I would like to ask Mr. Cooper if he can add anything regarding changes in moisture test to Mr. Neilson's remarks, as given. This is entirely incomplete, but Mr. Cooper may have something to add.

MR. COOPER: We have had practically the same experiences as the others. We have not been able to get enough nozzles to give us any information. When we did get them the water was frozen up. Perhaps next year we will have more information than at the present time. The wood seems to be about the same, containing forty-five per cent moisture out of the pile, and between fifty and fifty-five in the summer time when the wood comes in from the river.

MR. DURGIN: We have done quite a bit of work in the Spanish River Engineering Department on nozzles. The type of nozzle we used last year was not satisfactory on the whole, because the nozzles blocked up. The present is a type which will be installed this year. This is a No. 4 D, made by the Spray Engineering Company, and it gives the best results of any of the group of nozzles which were submitted and which we tested out.

The delivery from these nozzles is 1.2 gallons per minute and the area covered will be 30 x 40 feet. To handle the intake and endeavor to prevent sliming up of the nozzle nose, we will try out cleaning strainers on the intake to the pumps, and the pumps which will be installed will deliver eight hundred gallons and up, and when pushed to the limit, will give us a delivery of about a thousand gallons, which will take care of all the nozzles which will be required.

No data has been gathered of sufficient importance to tell us what the effect has been. The wood does not appear to be any different, and so far as we know at the present time, it is coming out of the pile the same as before, and with no additional difficulty.

Before the end of the year, enough data can be had to intelligently discuss the subject, but until then we have nothing but general information that the service last year was fairly good from a protection standpoint.

MR. HEBBARD asked if the nozzles tried included the Thomas nozzle, patented by Professor C. C. Thomas, of John Hopkins University, at Baltimore, which is adapted to control the cleaning of the nozzles, and was answered in the negative.

MR. KELLOGG: Mr. Chairman, some of you know that for several months this year the News Print Service Bureau made a considerable study of the weighing of pulp wood, moisture contents of wet wood and the yield of pulp from it, and that kind of work is being continued permanently as part of the Bureau's service to news print manufacturers, and one particular thing we investigated was a quick and cheap commercially accurate method of determining moisture in wood. The method which we have developed, consists of making a boring in the stick of wood to be tested, with an automatic drill, and driving out the chips, and using this instead of the disc. That work is not complete as yet, but it has gone far enough to indicate it is sufficiently accurate for a number of purposes, such, perhaps, as made in this case here today, and I am sure the News Print Service Bureau will be very glad indeed to furnish you with a brief statement of that work and the methods developed, and invite your investigation of it further if you care to make one, and if you care for such a brief statement, it can be included in the report of the proceedings.

THE CHAIRMAN: Thank you, very much, Mr Kellogg. We will take that matter up, and I am sure we would like to have that statement. (A report from the committee on the purchase of pulpwood by weight has been published in the Pulp and Paper Magazine).

MR. WARDLE: Mr. Chairman, I am sure, speaking for myself, that Mr. Hoxie is on the right track, and I think he deserves our thanks for the way he has kept after us, and so "more power to his elbow."

THE CHAIRMAN: If there are no further remarks to be made, we will consider that the discussion is concluded, and the Chairman personally wishes to thank Mr. Hoxie very much indeed for coming up here at our request and giving us some further inspiration for this work. It is undoubtedly one of great importance, and will eventually be solved to the benefit of the mills, particularly along insurance lines.

Electrical Association Discusses Paper Machine Drive

An interesting meeting of the St. Maurice Valley branch of the Canadian Electrical Association was held in the Technical High School at Three Rivers on February 23rd. There were nearly seventy in attendance and Mr. Reed of Shawinigan Falls, Chairman of the section, presided.

The first speaker was Mr. F. G. Warburton of the Harland Engineering Company, who first pointed out some of the difficulties with belt drives and then described in considerable detail the operation of the patent speed interlock which is the controlling apparatus and the principal feature of the Harland system of sectional drive for paper machines. In his introduction Mr. Warburton explained in a convincing manner and with photographic proof, that a belt running on cone pulleys must be seriously strained because of the differences in tension at various points across the face of the belt and consequently there is not only a serious effect from friction because of the different surface speed at different points, but actually an attempt for the belt to drive the pulley at one point and to be driven by it at another.

The explanation of the Harland method of controlling absolutely the speed of the motor for each section of the machine was similar to the more complete discussion of this matter at the annual meeting of the Technical Section. This address was published in the Pulp and Paper Magazine for January 20th. It proved, however, a very interesting subject to the engineers in the audience and brought out the very great sensitiveness of the differential gear as a basic factor in the control of motor speeds.

Mr. J. S. Riddile, Manager of the Laurentide Power Company, gave a few details with respect to the manner of controlling the motor speed through the operation of a master shaft whose speed is a definite index of the general paper machine speed desired and whose influence is transmitted to the field of the driving motors through the differential control. He explained how the slight shifting of a belt will immediately alter the speed of a section when it is necessary to change the draw due to a variation in the character of the stock and how the control will then hold the new speed absolutely constant. His explanation was good of the movement of the rheostat contact arm by the intermediate gear of the differential only when there is a divergence of speed from that at which the motor has been set and in such cases moves only enough to correct the tendency of deviation, usually but an infinitesimal amount.

Mr. Riddile described the tuning up process and stated that on the No. 9 machine of the Laurentide Company it took only a little over an hour to determine the proper settings of the regulators and produce a continuous sheet of paper. He explained that any motor can be started and stopped independently and the whole machine can be started and stopped as a unit while any action can be slowly inched along as when inspecting a wire, putting on a felt, etc.

The Westinghouse system of control of the motor for each section was explained by Mr. Staege who came on from Pittsburg. He first discussed the relative advantage in the use of a high speed motor and reducing gear and of the direct connected slow speed motor. It is his opinion that the factors of floor space, efficiency and cost must be considered in each case and the choice made on this basis.

In describing the Westinghouse system, Mr. Staege explained that direct current motors are used throughout and these are driven from a common bus. This bus is supplied with current from an independent generator and the speed of the whole machine can be varied quickly and accurately by a control of the generator voltage. For a small range of speed the common shunt field control is sufficient. For a large range such as 8 or 10 to 1, both shunt field and armature control is advisable. Uniformity of speed is maintained just as well at one speed as at another. The machine speed is altered by push button control operating a small motor-driven rheostat.

The speed of the individual motor on any section is varied by shifting a small belt on cone pulleys and is maintained constant by the operation of a small motor which is compelled to run at a definite frequency always in tune with the master frequency generator, so that any inclination for the motor to change speed will affect the frequency of the control and this will cause the change in the field current of the section motor, bringing it immediately back to the required speed — in fact operating so quickly that the motor does not have a chance to get out of step with the others on the machine.

The General Electric Company and the Canadian General Electric Company were represented by Mr. W. W. Cronkhite of Shenectady. He remarked that after hearing the other speakers he wondered how paper had ever been made at all without the sectionalized drive. He reviewed briefly, the manner of his company developing this type of drive and remarked that all the equipment was taken directly out of regular stock. A number of these drives are already in operation, the first one being the news machine of the Crown Willamette Company which is now running at 920 feet, and a book machine of the Kimberly-Clark Company which has a variation of from 100 to 600 feet of paper or a motor speed of 15 to 75 R.P.M. This type of drive used direct current motors obtained by reversing a regular engine driving generator. They are brought up to speed individually by the operation of a drum controller like that used on a street car and Mr. Cronkhite remarked that if the general type of motor-man could handle such pieces of apparatus, surely an intelligent machine tender should have no difficulty with it. He pointed out that it has not been possible, and probably will not be possible, to eliminate a cone drive somewhere for the changing of the draw between sections. In the General Electric system of control cones are used and small synchronous motors are used to take up and transfer any variation in load on any section electrically throughout the driving system so that instantaneously the machine continues to run at the speed for which each part is set. For instance, if the weights are lifted from the second press this section would have a tendency to run faster, but immediately the synchronous motor becomes a generator and acts as a brake on the second press driving the motor and send the current so produced into all the other synchronous motors, each of which feeds power to the driving motor with which it is connected. A variation in load of 7 per cent is the greatest change that has been observed on the news machine referred to.

Mr. Cronkhite humorously referred to the machine tender who objected to the electric drive because if the steam engine got out of order he could climb in and fix it but he would be darned if he was going to be electrocuted fixing electric apparatus. Another incident which caused great amusement happened in connection with the Crown Willamette machine. While tuning it up one of the men who was sweeping about noticed some dirt on a calender roll and attempted to sweep it off. His broom was immediately jerked out of his hand and drawn in between the rolls. A G. E. man happened to be standing at the controller and immediately slowed down and reversed the calender. The broom shot out at the workman so quickly that he was scared and betook himself to other parts without waiting to pick up his broom.

It may be remarked in this connection that the new machines of the Laurentide Company and of the Interlake Tissue Mills are being driven by sectional drives controlled by the Harland system while the new machine at the Ontario Paper Company will have a General Electric control and the new 158" machine at the Abitibi Company will have Westinghouse drive.

After the meeting, which had lasted from four until nearly seven, the party dined together and the members from Shawinigan and Grand'Mere left at eight o'clock while the others from out of town returned to Montreal on the night train.

PROPOSE A TARIFF ON PULP.

The preparation for hearings before the Ways and Means Committee of the House of Representatives on the tariff on paper has aroused much interest among manufacturers of paper in the country, not only as to tariff on various kinds of paper, but as to the pulp situation, says a letter from Secretary Baker of the American Paper & Pulp Association.

There seems to be some misunderstanding as to the amount of pulp produced in this country as compared with the amount of pulp brought in from Canada and Europe. Definite facts are the only sound basis for conclusion as to future supplies of pulp for the paper industry of the United States.

	MECHANICAL		CHEMICAL			
YEAR	MADE	IMPT'D	MADE	IMPT'D	MADE	IMPT'D
1899	586374	-	593151	-	1179525	-
1904	968976	-	952792	-	1921768	-
1907	-	-	-	-	2547879	-
1908	-	-	-	-	2118947	-
1909	1179266	142989	1316257	224661	2495523	367650
1910	-	226189	-	278925	2533976	505115
1911	-	267089	-	299330	2686134	566419
1912	-	185802	-	354346	-	540148
1913	-	170493	-	373566	-	544059
1914	1293661	217580	1571896	458154	2893160	675734
1915	-	178535	-	382801	-	561336
1916	1508139	262618	1926862	421165	3435001	683778
1917	1535953	279071	1973986	398369	3509939	677440
1918	1364504	185527	1949357	392691	3313861	578218
1919	1449799	202612	1934969	433807	3384768	636419
1920 Est.	1550000	200000	2250000	550000	3800000	750000

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The Secretary of the Pulp Manufacturers Association, Mr. H. H. Bishop, was asked to prepare a statement on the amounts of mechanical and chemical pulp manufactured in the United States and imported from other countries. The following paragraphs are taken from the letter addressed to this Association by Mr. Bishop.

"As requested by you, I give below a statement of the amounts of mechanical and chemical pulp manufactured in the United States and imported from other countries.

As a further matter of interest, we have calculated the percentage of Production and Importations so far as it is possible from the above table from which you will note that the percentages while they have varied slightly from year to year, are reasonably consistent and indicate that about 1/6 of the pulp used in the United States come from outside sources.

PERCENTAGES OF PRODUCTION AND IMPORTATIONS OF PULP USED IN THE UNITED STATES

	MECHANICAL		CHEMICAL		TOTAL	
YEARS	MADE	IMPT'D	MADE	IMPT'D	MADE	IMPT'D
1909	89.2	10.8	85.4	14.6	87.1	12.9
1914	85.6	14.4	77.5	22.5	81.1	18.9
1916	85.	15.	82.	18.	83.4	16.6
1917	84.6	15.4	83.2	16.8	85.1	14.9
1918	88.	12.	83.2	16.8	85.1	14.9
1919	87.7	12.3	81.7	18.3	84.2	15.8
1920	88.6	11.4	80.4	19.6	83.5	16.5

Your attention is particularly invited to the very great increase both in manufacture and in import of pulp during the year 1920, when the entire Paper Industry was enjoying an abnormally large business. The fact that the United States produced in the year 1920, under these favorable circumstances, 3,800,000 tons of pulp, of all kinds, and that the consumption of pulp during the years 1918 and 1919 (reasonably normal years) averaged 3,850,000 tons, it became self evident that the United States actually possesses sufficient pulp making capacity to very nearly meet its requirements in normal years and that with very little encouragement production might be increased to a point where it could supply the entire demand and have a surplus. It is with a view of obtaining this encouragement that we are asking for a revision of the existing tariff, which places pulp upon the free list, so that duties be imposed as follows:

Mechanical Pulp..	1/10 of 1c. per lb.
Unbleached Chemical Pulp	2/10 " " " "
Bleached Chemical Pulp	3/10 " " " "

The effect of the imposition of such duties would, in our opinion, be to encourage further production of pulp in the United States for the reason that United States manufacturers would then be upon a more nearly equal basis with Canadian and Scandinavian manufacturers, whose advantage from both the standpoint of raw material and labor is certainly greater than the small duty suggested."

A printed brief, prepared by the Tariff Committee of the American Paper and Pulp Association, has been sent to every member of the Association. This brief will give a more comprehensive statement as to the Pulp situation in the United States.

The Toronto Paper Mfg. Co. whose mills at Cornwall have been operated for some time by the Howard Smith Paper Mills, Ltd. has now been fully absorbed by the latter. From now on, shipments are to be billed to Howard Smith Paper Mills, Ltd., Cornwall, Ontario, and invoices and other communications addressed to the head office, 138 McGill St., Montreal.

PULP EXPORTS DECREASED IN JANUARY.

Canadian exports of pulp and paper for the month of January were valued at $9,663,054, compared with $9,151,266 in January 1920, a gain of $511,788. There was a gain of $1,969.440 in the value of paper exports, a loss of $881,214 in the value of chemical pulp exported, as shown in the following table:

January	1920	1921	Gain or Loss
Paper	$5,519,718	$7,489,158	$1,969,440
Chem. Pulp	2,658,974	1,777,760	881,214 #
Mech. Pulp	972,574	396,136	576,438 #
Totals	$9,151,266	$9,663,054	$ 511,788

# Loss.

The export of paper included 7,703 cwts. of book paper, valued at $109,205; 1,146,831 cwts. of newsprint valued at $6,532,034, and other paper to the value of $847,919. There was a decrease of 5,677 cwts. in volume and an increase of $2,060,235 in value of the newsprint exported as compared with January 1920.

Pulp exports included 83,722 cwts. of sulphate (kraft) valued at $426,827; 74,125 cwts. of bleached sulphite, valued at $526,839; 143,299 cwts. of unbleached sulphite, valued at $824,094, and 133,951 cwts. of groundwood, valued at $396,136.

The countries of destination were: Paper: United Kingdom, $210,105; United States, $6,167,547; other

EXPORTS OF PAPER, WOOD PULP AND PULP WOOD.

January, 1920 and 1921; and ten months ending January, 1919, 1920 and 1921.

Paper		Month of January		Ten months ended January		
Printing paper		1920	1921	1919	1920	1921
Book paper	Cwt.	4,646	7,703	....	41,184	54,806
	$	43,490	109,205	....	376,853	634,356
Newsprint paper	Cwt.	1,152,508	1,146,831	....	11,579,711	12,540,412
	$	4,471,799	6,532,034	....	41,727,089	63,503,757
Printing paper	Cwt.	....	....	10,652,228	....	....
	$	....	....	31,822,722	....	....
Other paper	$	1.004,429	847,919	5,276,441	7,613,882	11,039,742
Total paper	$	5,519,718	7,489,158	37,099,163	49,717,824	75,177,855
Wood Pulp						
Sulphate (Kraft)	Cwt.	195,650	83,722	....	2,078,330	2,111,309
	$	618,888	426,827	....	6,805,903	11,092,257
Sulphite, bleached	Cwt.	112,285	74,125	....	965,094	1,718.966
	$	599,030	526,839	....	4,896,472	13,758,055
Sulphite, unbleached	Cwt.	364,499	143,299	....	3,394.232	4,516,965
	$	1,441,056	824,094	....	14,807,251	26,587,209
Chemically prepared	Cwt.	....	....	7,302,633	....	....
	$	....	....	26,268,144	....	....
Mechanically ground	Cwt.	609,206	133,951	3,174,602	6,231,722	5,055,710
	$	972,574	396,136	4,035.940	7,348,728	15,963,677
Total wood pulp	Cwt.	1.281,640	435,097	10,477,235	13,239,378	13,402,950
	$	3,631,548	2,173.896	30,304,084	33,858,354	67,401,198
Pulp wood	Cord.	59,789	155,752	1,303,370	738,477	1,243,112
	$	615,181	2,271,363	12,567.353	7,417,390	16,396,940
Country of Destination						
Paper and manufactures of—						
To United Kingdom	$	401,467	210,105	782,440	3,752,366	3,621,882
United States	$	4,409,907	6,167.547	30,811,721	39,667,928	58,780,513
Other Countries	$	708,344	1,111,506	5,505,002	6,297,530	12,775,460
Wood pulp—						
To United Kingdom	$	149,922	....	48,522	4.299,477	7,678,274
United States	$	3,045.013	1,865,372	27,713,523	25,664,347	54,801,216
Other Countries	$	436,613	308,524	2,542,039	3,894,530	4,921,708
Pulp wood—						
To United Kingdom	$	....	....	....	....	....
United States	$	615,181	2,271.363	12,567,357	7,417,390	16,396,940
Other Countries	$	....	....	....	....	....
Total paper, wood pulp and pulp wood						
To United Kingdom	$	551,389	210,105	830,962	8,051,843	11,300,156
United States	$	8,070,101	10,304,282	71.092,601	72,749,665	129,978,669
Other Countries	$	1,144,957	1,420,030	8,047,041	10,192,060	17,697.168
Totals	$	9,766,447	11,934,417	79,970,604	90,993,568	158,975,993

countries, $1,111,506. Pulp: United States, $1,865,372; other countries, $308,524.

Unmanufactured pulpwood to the amount of 155,752 cords, valued at $2,271,363, was exported to the United States in January, compared with 59,789 cords, valued at $615,181, in January, 1920.

For the first ten months of the current fiscal year, April to January inclusive, pulp and paper exports reached a value of $142,579,053, compared with $83,576,178 in the corresponding period of 1920, and with $67,403,247 in 1919, a gain of $59,002,875 over 1920, and of $75,175,806 over 1919. They were made up as follows:

Ten months	1919	1920	1921
Paper	$37,099,163	$49,717,824	$75,177,855
Chem. Pulp	26,268,144	26,509,626	51,437,521
Mech. Pulp	4,035,940	7,348,728	15,963,677
Total	$67,403,247	$83,576,178	$142,579,053

Exports of unmanufactured pulpwood for the 10 months were 1,243,112 cords, valued at $16,396,940, compared with 738,477 cords, valued at $7,417,390, for the corresponding months ending January 1920, and 1,303,370 cords, valued at $12,567,357, ending January 1919, all of which went to the United States.

STATISTICS OF THE U. S. PAPER INDUSTRY IN 1920.

The Federal Trade Commission has just issued a very complete tabular summary of the pulp and paper industry in the United States for 1920. The following tables are quoted from this report. The increases in production of the principal grades during 1920 as compared with 1919 are as follows:

Total Newsprint, 10 p.c.; Standard News, 12 p.c.; Book, 27 p.c.; Total Paperboard, 18 p.c.; Boxboard,*; Wrapping, 20 p.c.; Bag, 21 p.c.; Fine, 13 p.c.; Tissue, 14 p.c.; Hanging, 24 p.c.; Felt and Building, 30 p.c.; Other Grades, 50 p.c.. Total for all grades, 18 per cent.

*Figures for "Boxboard" prior to March, 1920, were included under "Total Paperboard."

Domestic production of pulp, by grades in the United States of America, 1917-1920 inclusive, in tons, was:

Ground Woodpulp, production for year—1917, 1,447,068; 1817, 1,303,403; 1919, 1,449,799; 1920, 1,578,300.

Sulphite, News Grade.—1917, 744,470; 1918, 744,944; 1919, 723,991; 1920, 843,514.

Sulphite, Bleached.—1917, 497,085; 1918, 484,525; 1919, 515,897; 1920, 578,081.

Sulphite, Easy Bleached.—1917, 85,081; 1918, 80,730; 1919, 66,465; 1920, 72,394.

Sulphite Mitscherlich.—1917, 78,751; 1918, 74,799; 1919, 79, 353; 1920, 82,687.

Sulphate Pulp.—1917, 108,431; 1918, 167,438; 1919, 161,887; 1920, 212, 888.

Soda Pulp.—1917,398,684; 1918, 343,611; 1919, 377,473; 1920, 431,971.

Other than Wood Pulp.—1917, 11,999; 1918, 12,898; 1919, 9,903; 1920, 7,821.

Total for all Grades.—1917, 3,371,569; 1918, 3,212,398; 1919, 3,384,768; 1920, 3,807,656.

Increases in the production of pulp by grades, during 1920 as compared with 1919, was as follows:—

Ground Wood Pulp, 9 p.c.; Sulphite, News Grade, 17 p.c.; Sulphite, Bleached, 12 p.c.; Sulphite, Easy Bleach, 9 p.c.; Sulphite, Mitscherlich, 4 p.c.; Sulphate Pulp, 31 p.c.; Soda Pulp, 14 p.c.; Other Grades *21 p.c. Total for all grades: 12 p.c. *Decrease.

The Publicity Club of Springfield has announced the appointment of Mr. J. A. Priest as General Chairman of the local committees in charge of the 1921 Direct Mail Advertising Association Convention. Mr. Priest has already announced the appointment of Mr. Edmund E. Keough, of the American Writing Paper Company, as chairman of the Magazine and Advertising Club Publicity Committee.

Careless and failure are twins.—B. C. Forbes.

IMPORTS AND EXPORTS OF ALL GRADES OF PAPER, (POUNDS AND VALUE) AND IMPORTS AND EXPORTS OF ALL GRADES OF PULP, (NET TONS), 1917 TO 1920, inclusive. (a)

	PAPER							
	1920		1919		1918		1917	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
Imports								
Newsprint	1,459,737,288	$68,600,950	1,255,462,866	$43,674,094	1,192,540,059	$35,023,161	1,118,225,912	$30,929,628
Book Paper	4,340,425	496,132	164,886	58,319	182,995	42,633	412,091	67,931
Wrapping	4,941,824	460,289	4,802,487	406,570	7,942,134	541,866	6,661,518	456,752
Hanging	---------	353,791	---------	104,326	---------	143,449	---------	281,906
All other grades (b)	---------	2,741,238	---------	1,638,711	---------	2,541,157	---------	4,144,426
Exports								
Newsprint	91,951,913	5,983,611	220,589,829	10,100,229	193,477,853	7,978,296	187,732,739	7,586,374
Book Paper	95,689,512	13,765,694	153,327,185	16,160,777	99,220,241	8,710,940	94,548,586	8,179,868
Paperboard	----------	5,553,094	----------	4,604,048	----------	3,055,255	----------	2,232,135
Wrapping	61,264,501	6,994,381	74,916,830	6,664,462	59,899,043	4,828,856	52,485,911	3,987,239
Bag	----------	2,593,459	----------	1,566,373	----------	884,415	----------	1,136,272
Fine	----------	8,908,230	----------	13,188,165	----------	6,113,498	----------	3,636,235
Tissue	----------	2,654,529	----------	2,237,570	----------	1,526,777	----------	480,289(c)
Hanging	----------	1,251,743	----------	899,457	----------	529,539	----------	465,814
All other grades (b)	----------	11,091,952	----------	8,799,550	----------	6,170,601	----------	5,374,707
TOTAL IMPORTS	----------	72,652,400	----------	45,882,020	----------	38,292,266	----------	35,880,643
TOTAL EXPORTS	----------	58,796,693	----------	64,220,631	----------	39,798,177	----------	33,078,933

	PULP								
Imports	1920 Net Tons	1919 Net tons	1918 Net Tons	1917 Net Tons	Exports	1920 Net Tons	1919 Net Tons	1918 Net Tons	1917 Net Tons
Chemical Wood Pulp									
Bleached Sulphite	128,206	42,755	16,757	41,037	Domestic Wood Pulp	32,133	40,095	22,324	39,180
Unbleached Sulphite	344,969	239,952	253,454	248,173					
Bleached Sulphate	17,277	5,145	3,759	1,625					
Unbleached Sulphate	182,697	145,911	118,761	107,933					
Ground Wood Pulp	233,148	202,253	185,478	279,073					
Paper Stock other than wood pulp	254,755	110,195	29,397	20,977(d)	Rags and Other Materials made from Vegetable Fibres	42,282	27,271	16,121	16,312
TOTAL	1,161,052	746,211	607,606	698,818	TOTAL	74,415	67,366	38,445	55,492

(a) Data furnished by the Department of Commerce. Figures for Pulp given in long tons and reduced to net tons by the Commission.

(b) Includes some paper already converted into commercial articles.

(c) Last six months only. First six months included in other grades.

(d) Rags only.

British Trade News

(From our London Correspondent.)

London, Feb. 14, 1921

The news has reached London that the Titaghur Paper Mill, in India, will be extended to the erection of a bamboo pulp mill. It will be run by an auxiliary company. Recently the Titaghur Paper Mill Co. Ltd. paid a dividend for the half year of 25 Rupees per 100 Rupees ordinary share, which is considered satisfactory. The mill, however, has many difficulties in the way of railroad and transport for conveying raw materials.

Paper Mills Closed: Others Busy.

If anybody wants to find out what things are like in a paper mill today they have only to study the labor market. It is like a barometer. Present reports state that unemployment among paper mill workers in the United Kingdom is on the increase and agents, as well as mill owners, say that business is very dull all round and stocks are keeping up. There is a divergence of opinion, however, as to the outlook. Some people look on it as gloomy; others say a good time is coming as buyers will sooner or later find their supplies exhausted. But the fact remains that unemployment is not decreasing and it may be taken as a sign of the times. Indeed, if it was not for the small amount of business moving on export account with British colonies and dependencies things would be very critical. But the dullness of trade has, in some cases, influenced mill owners to close down and carry out repairs to their machinery and buildings, but this is not so in all cases. An indication of the state of trade in East Lancashire is furnished by the intimation that three mills at Darwen are closed down and a similar story comes from other parts of England. Kent, the centre of hand made paper, mostly for Government purposes, is in a happier position. The mills at St. Mary Cray and St. Paul's Cray, places only a short run from London, are working full capacity. They have enjoyed a lengthened period of prosperity and it is gratifying to record that there is at least one section of the paper industry that does not feel the present pinch of depression. Looking round generally it stands to reason that the present depression cannot go on much longer and there is one ray of hope in this direction by the removal of the Excess Profits Duty by the Government. It was a most notorious millstone hanging round the necks of paper mill owners and crippled trade, not to speak of the expansion of business or schemes, in all directions. The removal of this bugbear may brighten things up for the near future and create a better feeling in the markets. To give Canadians an idea of what taxation is like in the United Kingdom, one small mill has to set aside £100,000. It takes a lot of paper to be sold to make up this amount before the management begins to think of profits—and profits are not easily picked up in a keen competitive market with foreign competition on all sides. Yet is it done, as past dividends show!

The Pulp Situation.

The market for chemical pulps continues dull and depressed and contracts entered into are undergoing revision. The groundwood market is in a similar plight. Naturally the slump in the paper industry is keenly reflected in pulps. Quotations are about as follows:—

Bleached Sulphite	£55
Easy Bleaching	42
Sulphite News (No. 1)	37.5
Unbleached Soda	37.10
Soda Kraft	33
Groundwood (50 p.c. wet)	10
Groundwood (dry)	20

These are F.O.B. prices, with freights and insurances, c. i. f. United Kingdom ports.

Canada In The Limelight.

In my last notes I commented on the dilatory classification of imports into the United Kingdom by the Customs. The new year, however, has opened with an improvement and for the first time in the monthly returns Canada figures in the limelight shining on newsprint imports. In the past one had to wait a year for the figures or go to Canada for them. Now we are in a position, month by month, to see what the Dominion is doing in relation to Scandinavia and other places and the comparison for January imports of newsprint are interesting as the following figures given by the Board of Trade show:—

		Average for January.	
	1921.	Value 1921.	1920.
	Cwts.	£	Cwts.
Sweden	16,940	2.17.7	37.200
Norway	22,080	2.13.6	45.600
Germany	11,000	2.16.8	400
Belgium	1,400	3.10.10	480
U. S. A.	2,600	4 . 5.4	3,900
Canada	4,920	2.18.5	11,700
Newfoundland	......	......	......
Other places	33,460	2.10.9	35.960

On glancing at the average value, based on the returns, it will be seen that Canada is not much above Scandinavia. It is, however, regrettable to notice such a falling off in the shipments, but the ratio is not so great as that of Scandinavia as a whole.

Wrapping Papers.

Canada also appears in the figures for wrapping papers and it will be seen that there is room for improvement in the British market. The imports for January were:

Finland	5,810	cwts.	£16,194
Sweden	23,034	"	73,833
Norway	18,768	"	67,497
Germany	21,711	"	70,012
Belgium	6,844	"	25,639
Canada	5,682	"	14,322
Other places	18,805	"	62,225

Other imports from the Dominion during January include millboards, card and paste boards.

Pulp Imports.

The imports of groundwood into the United Kingdom reached 28,153 tons, valued at £386,807, as against 23,300 tons in January 1920, valued at £205,878, and 42,130 tons at £98,779 in 1913. Canada and Norway were the principal supplying countries as the following imports show:—

	1921.		1920.	
	Tons.	£	Tons.	£
Sweden	280	3,254	2,875	28,238
Norway	24,943	348,566	20,208	175,722
Canada	2,930	34,987	......	....
Other places	......	....	217	1,918

These figures show a material rise in Canadian exports of ground wood (wet).

The imports of chemical pulps were as follows in January:

		Bleached Chemical Dry.	Unbleached Chemical Dry.
Finland	Tons	—	101
Sweden	"	99	12.034

Norway..	"	1,471	3,291
Germany..	"	138	508
Canada & other places	"	126	537

The total supplies of all kinds of chemical pulps into the British market during January, compared with the corresponding period in 1920, were as follows:—

	1920.	1921
Bleached chemical (Dry) ..	3,755 Tons.	1,834 Tons.
Unbleached (Dry)	63,637 "	16,471 "
Chemical wet	160 "	40 "
Groundwood (Wet)..	23,300 "	28,153 "
" (Dry)	3,168 "	567 "
Total..	94,020 "	47,065 "

The totals show a reduction in the imports of all kinds of pulp during January. A significant feature is the German supply of sulphite, bleached and unbleached, that is coming into the country, and it will be noticed that the figures are gradually creeping up to those of pre-war times.

Looking back at the supplies of pulps for the past three months the figures are:—

	Chemical.	Groundwood.
November, 1920..	49,000 Tons.	31,000 Tons.
December, 1920..	47,000 "	42,000 "
January, 1921	18,350 "	28,850 "

British Exports.

The exports of British paper and cardboard in January, compared with the corresponding period in 1920 and 1913, are as follows:—

1921	221,467 cwts.	£1,417,784
1920	158,419 "	656,864
1913	322,931 "	334,844

Considering the dullness in trade these figures for January last are not at all bad and a noticeable feature is the falling off in the exports to Canada as the following return shows:—

	Printings. Cwts.	Writings. Cwts.	Other kinds. Cwts.
France..	3,144	266	57
U. S. A.	1,096	25	696
Other Foreign places	23,801	4,616	2,383
British South Africa.	16,390	2,016	425
British India	17,526	3,739	759
Straits Settlements. .	1,089	785	—
Ceylon	1,844	344	—
Australia	48,860	7,367	1,141
New Zealand..	9,384	2,094	278
Canada	439	——	165
Other places	6,727	1,253	—

BROMPTON'S DIVIDEND.

Reports to the effect that new financing might necessitate the Brompton Pulp and Paper Company passing its next dividend were brought to the attention of F. N. McCrea, M.P., president of the company last week.

"Up to six weeks ago, we were doing a very large business at a fair profit," he said. "Since then we have, like other paper companies, been somewhat affected by the depression in our trade.

"We paid our last dividend and the next is not due for some months. I cannot forecast what business will be. We have ample assets and securities. It is all a question of the volume and profit of future business."

BOOK REVIEW.

PAPER AND ITS CONSTITUENTS.—A Manual of Technical Methods. Chemistry and analysis of raw materials; papermaking fibers: bleaching, sizing and loading agents and dyestuffs, microscopy; and physical and chemical properties of papers. By Henry Aldous Bromley, H. M. Stationery Office. vii + 232 pp. 4 plates. 8 vo. London: E. and F. N. Spon, Ltd.; New York, Spon and Chamberlain, 1920. 15s. net.

The greater part of the matter in this book originally appeared as a series of articles in the pages of the "Paper Maker" from February, 1914 onwards. The material has now been revised and rearranged, and every effort made, according to the author, to include the most up-to-date aspects of the subject within the limits of its scope. The book is intended both as a work of reference and as a manual for the use of students preparing for technological examinations.

The first 20 pages deal with the occurrence, chemical characteristics and reactions of cellulose and give a short description of the commoner fibers employed in the manufacture of paper.

The second part (pages 21-140) deals with general chemistry for papermakers, and the chemistry of the various materials used in papermaking, such as bleaching agents, sizes, mineral filling, loading agents, pigments and dyes, and water. It also attempts to give methods of analysis of the various substances. These chapters are well written for the general reader, but are too condensed to be of value as a reference work. Methods of analysis, especially, should be detailed to be useful to the laboratory or mill operative. The chapter on general chemistry is such that it would need supplementing from an elementary textbook on chemistry before the reader would be in a position to do the simplest laboratory experiment.

The third part describes the methods of examining paper with reference to their microscopical, physical and chemical properties. This section is by far the most valuable, and will doubtless prove of considerable service to those engaged in the paper industries.—Reviewed for the Pulp and Paper Magazine, by Clarence Jay West.

Sincere congratulations to Dominion Engineering Works, Harland Engineering Co. and the paper mills they have been serving. The former has accomplished a big job in having three machines started all within two months and with two more to begin operations within the current month. Four of them are equipped with the Harland sectional electric drive. Laurentide's second "acme of paper machines" started making paper at 700 feet; Interlake's tissue machine is turning out the universal product, and Howard Smith's and Strathcona's machines will soon be turning out writings and boards. This takes in about the whole range of paper-making and the successful accomplishment of such installations is a record for the Canadian industry to be proud of. It reflects credit alike on the paper mill and the machinery men.

The reward of a thing well done is to have done it.
— Emerson.

Technical Section

ABSTRACTS OF PATENT SPECIFICATIONS.

A-12. Purification of partly oxidized resins. U. S. patent No. 1,316,842 JOHN R. KOHLER, Stockholm, Sweden, Sept. 23, 1919. Chem. Met. Eng., **22**, 89, (Jan. 14, 1920). Old resins which flows spontaneously from confiers or from wounds of tapped trees consist of a mixture of oxidised resins acids and crystallized resin acids both constituents being sol, in EtOH. Solvents such as C_6H_6 and oil of turpentine dissolve only the valuable crystallizable resin acids, which may be recovered as light-colored colophony of high quality.—A. P.-C.

D-2. Recovery of organic products from wood. U. S. patent No. 1,339,489, H. F. WEISS, Assignor to C. F. Burgess Laboratories, May 11, 1920. J. Soc. Chem. Ind., **39**, 482A, (July 15, 1920). Wood is ground in a current of water which serves to carry away the pulp; the water is separated from the pulp and used again, this cycle of operation being repeated until the concentration of the organic products in the water is sufficient for the subsequent recovery process.—A. P.-C.

E-2. Improved sulphur dyes from sulphite waste liquors. U. S. patent No. 1,316,742, JACOB S. ROBESON, Pennington, N.J., U.S.A., Sept. 23, 1919. Chem. Met. Eng., **22**, 138, (Jan. 21 1920). S dyes obtained from sulphite waste liquor are improved be converting the Ca ligno-sulphonate into the corresponding salt of a heavy metal base: e.g. Fe (brownish black), Al (red brown), Cu (seal brown), Zn, (gray brown), etc. —A. P.-C.

E-2; F-2. Active discolorizing carbon from cellulosic materials. Ger. patent No. 309,155, Zellstoff-fabrik Waldhof, June 22, 1917. J. Soc. Chem. Ind., **39**, 479A, (July 15, 1920). A decolorizing C with a greater efficiency than wood or animal charcoal is obtained by carbonising the residues derived from the hydrolysis of cellulose or cellulosic materials.—A. P.-C.

E-4. Process for regulating the acidity of sulphite liquor. U. S. patent No. 1,340,649, J. B. CRANDON, Assignor to Crandon Mfg. Co., May 18, 1920. J. Soc. Chem. Ind., **39**, 483A, (July 15, 1920). The liquor is caused to form the electrolyte of an electric battery and the current produced measured.—A. P.-C.

K-12. Paper making machine. U. S. patent No. 1,343,505, ANTON J. HAUG, Assignor to Improved Paper Machinery Co., Nashua, N.H., U.S.A. Claims allowed 37. Paper, **24**, (July 14, 1920). In a paper making machine, the combination with a pulp tank and a rotary screen therein, of an overflow tank for the screened white water, and normally closed means for discharging the pulp residue of the tank at will to the white water chamber.—A. P.-C.

K-12. Improved process for watermaking paper. Fr patent No. 496,612, Kansas Pappersbruks Aktiabolag, Finland. Paper 24, (Aug. 1920). See Pulp and Paper, **18**, 439, K-12, Apr. 22, 1920.—A. P.-C.

K-18. Method and machine for handling plaster board. U. S. patent No. 1,342,185, O. L. ROUTT, G. C. McCONNELL, and H. GLAZE, Assignors to Plastoid Products, Inc., Los Angeles, Cal., U.S.A. Paper, 24, (Aug. 4, 1920). Means for handling plaster board which consists of an inclined railway, carrier to receive said paster board adapted to move along said runway under the place of discharge of said plaster board, the latter holding the carriers to a movement corresponding to the feed speed of said plasterboard. Claims allowed 6.—A. P.-C.

K-18. Strawboard lining for cyanamide furnaces. U. S. patent No. 1,315,678, WM. H. MIDDLETON, Niagara Falls, Ont., Assignor to American Cyanamide Co., Sept. 9, 1919. Chem. Met. Eng., **22**, 89, (Jan. 14, 1920). By merely lining a cyanamide furnace with corrugated strawboard a given oven will hold 35 per cent more carbide than when a paper sleeve is used, and 50 per cent more than when a metal container is used. The usual cylinder around the resister is provided and, in addition, tubes of corrugated strawboard extend from the N inlet to the resister space so that effective distribution of the N is obtained.—A. P.-C.

K-20. Process for the manufacture of parchment paper. Eng. patent No. 123,594, W. DAGNALL, England. Chimie et Industrie, **4**, 814, (June 1920). (Same as Fr. patent No. 495,742.) The paper is rendered water and acid-proof and its strength is greatly increased by passing through two baths of H_2O_4 mixed with H_2SO_4, the second being the more dil. of the two. The acid is pressed out of the paper as it comes out of each bath, and neutralized in an alkaline bath. It is then washed and then treated in a bath contg. glycerine, chloride of lime, salt or an analogous product, with or without the addition of loading material, and finally dried.—A. P.-C.

K-21. Pulp for the manufacture of roofing felts. Eng. patent No. 135,466, R. KRON, Oct. 2, 1919. Same as Fr. patent No. 493,387. See Pulp and Paper, **18**, 58, K-6, K-21, (Jan. 15, 1920). A. P.-C.

K-23. Combustible paper Eng. patent No. 124,516, C. R. HARRISON and W. BACON, England. Chimie et Industrie, **4**, 814, (June 1920). A considerable proportion of nitrocellulose, or the like, is added to the pulp, and the paper is finished in the usual manner. After sizing, insol Ca or Mg salts (e.g., $CaCO_3$ or $MgCO_3$) are added, and the paper may be impregnated with a solution of a metallic nitrate, e.g., $NaNO_3$.

K-23. Waterproof paper. Eng. patent No. 124,689, K. KONAGAL, Japan. Chimie et Industrie, **4**, 814 (June 1920). The paper is immersed in a gelatin solution, which coagulated by means of a solution of a mixture chrome and ammonia alums. It is then coated by means of the following mixture: castor oil, ceruse, ZnO, linseed oil, with or without the addition of infusorial earth. Each mixture, may be diluted with turpentine. Finally, a final coating may be given with a rubber solution.—A. P.-C.

L-7. Dyeing threads and paper textiles by means of substantive dyes. Ger. patent No. 310,965, Chemische Fabrik Coswig-Anhalt. Ges. m.b. H., Germany. Chimie et Industrie, **4**, 492, (April 1920). The exhaustion of the bath may be obtained by the addition of boric or acetic acids or NH_4 salts of phosphoric acid. They may be added either at the beginning of the dyeing operation, before heating, or during the boiling. All substantive colors may be used.—A. P.-C.

UNITED STATES NOTES

Manufacturers of paper from upper New York State and delegates representing the International Brotherhood of Paper Makers, met last Thursday and Friday, in the Murray Hill Hotel, New York City, for conferences regarding the scale of wages at the expiration of the present schedule, May 1, 1921. Officials of the St. Regis Paper Company, the Union Bag and Paper Company, the Sherman Paper Company and the Remington Paper Company, were present; and the paper workers were represented by J. T. Carey, president of the international union, and John Burke, president of the Pulp and Sulphite Workers' Union. Officially the meetings were said to have been routine, in accordance with contracts between manufacturers and the union of their employees, which require that a notice of proposed alterations be given sixty days before the expiration of existing agreements. Unofficially it was reported that the workers had demanded a wage increase ranging from 5 to 10 per cent. Unemployment insurance also was recommended. The manufacturers will meet about the middle of this month to consider the proposals.

New bids for contracts to supply paper to the Government Printing Office were entered last week before the Joint Congressional Committee on Printing. The number of representative paper concerns bidding exceeded the number making the original proposals in January. The prices quoted showed a decided drop from those submitted in the rejected bids of a month ago. As a typical instance, the price on about 4,000,000 pounds of writing paper shows a decrease since Jan. 31 of from 3 to 4 cents a pound. Book paper is down 1 cent, and newsprint paper, which was quoted at 6.28 cents delivered on January 31, is now quoted at 5.48 cents delivered. It is estimated that if the committee offers the contracts on the basis of the figures submitted, it will have saved the Government $300,000 as a result of the rejection of all bids several weeks ago.

Consul W. H. Sholes at Goteborg, Sweden, reports that 165,000 tons of newsprint paper was manufactured in Sweden in 1920. The figures he quotes are given out by the Swedish Association of Paper Mills. For 1921 the total Swedish newsprint production is expected to reach about 175,000 tons. The exports during the period January to November, 1920, amounted to a total of 105,919 tons and will probably reach 120,000 tons for the year, compared with 66,066 tons in 1919.

Officials of the Kimberley-Clark and Neenah Paper Companies, Wisconsin, are greatly pleased over the result of the appeal made to the workers in its plant for increased production. The records made by the Kimberley and Niagara mills during January show an average daily production of 146 17/100 tons at the former and 91 3/10 tons at the latter. The quality of the product has been kept up to the former standard. The company management expressed its thanks and appreciation for the fine response to its appeal, saying that it is enabled through showings like these to meet all fair competition, assuring to the workers at the same time almost continuous operation and employment.

Several American promoters are planning to erect a large paper mill in the vicinity of Ipoh, British Malaya. The necessary machinery will probably cost well over a million dollars. The mill will have not only the local market to supply but an almost unlimited export trade to develop.

The membership of the Cost Association of the Paper Industry has been increased by the addition of the following firms: The New York and Pennsylvania Company, the Hammersley Manufacturing Company, the Richardson Company, the Kalamazoo Vegetable Parchment Company and the Neenah Paper Company.

Juneau, Alaska, has received the first shipment of Alaskan made wood pulp. It was part of a consignment contracted for by a paper mill in California. The pulp was manufactured in January in the Speel River plant of the Alaska Pulp and Paper Company and was shipped through Juneau under the direction of W. P. Lass, secretary and Juneau city manager for the company. The initial consignment, a test shipment of several tons, was brought over on a boat from Speel River by way of Taku Inlet. Mr. Lass says that the company's mill will soon be operating to its full capacity of twenty tons a day.

Employees of the Crocker-McElwain and Chemical Paper Manufacturing Companies, Holyoke, Mass., have agreed to the continuation of the individual employment contracts proposed by the firm heads. This ends, so far as the workers not affiliated with the Eagle Lodge of Paper Makers are concerned, the controversy over these contracts which began in the spring of 1920 when the proposition was introduced by Mr. McElwain. The Eagle Lodge has rejected the contract and the Lodge officials say they are unable to interpret the status of the paper makers who have signed, ignoring the action of the Union. Mr. McElwain considers the dispute settled, claiming that all unions represented in the company have agreed to his proposition, with the result that the paper mills have resumed operations.

In a summary of last year's business in the paper industry given out last week by the Federal Trade Commission, 1920 production of newsprint paper by mills in the United States is put at 1,511,968 tons, an increase of 10 per cent over 1919. The year ended with 24,763 tons of newsprint on hand, as compared with 15,369 tons carried over from 1919. The production of standard news, the grade used by newspapers, totalled 1,380,239 tons, an increase of 12 per cent over 1919. The productions of book paper, paperboard, wrapping paper, bag paper, fine paper, tissue paper, hanging paper and building paper all exceeded the amounts made in any of the years beginnig with 1917, when the commission began collecting figures.

Mr. Edward W. Connors, of the James W. Sewall forest engineering office, Old Town, Maine and Washington, D.C., is in New York and Boston making calls on land owners and operators in the interests of the Sewall organization. Mr. Conners reports that general sentiment is optimistic for the future in both pulpwood and lumber although present conditions are quiet. Another of Mr. Sewall's men who recently returned from an extended trip through the south reports much the same quiet confidence in a coming well-sustained business.

PULP AND PAPER NEWS

Up to date the timber probe has cost the Province of Ontario $69,519, according to information tabled in the Legislature by Attorney General Raney. R. T. Harding as counsel, has received $2,000 on account of fees. The commissioners have received $2,000 on account of services. Because of the enacting of legislation at Ottawa, prohibiting the payment of judges for services of this character. Hon. Mr. Raney said that no moneys would be paid to the commissioners for service after that statute came into effect.

The Canadian Pulp Machinery and Engineering Company, Limited, has been granted incorporation under the Ontario Companies Act with power to deal in and manufacture pulp making machinery. The capital stock is $200,000 and the head office is to be at Toronto. The provisional directors are Toronto students-at-law.

The Lincoln Paper Mills Company, Limited, Merritton, Ont. has turned one of its machines onto the manufacture of M. F. and S. C. book paper, sulphite bonds, and white wove envelopes and the first samples issued a few days ago are of excellent quality. The mill, in this department, has a capacity of from twenty to twenty-five tons a day.

The many friends in the paper trade of Mr. Robert Jennings, of the Ratcliffe Paper Co., Ltd., Toronto, will regret to learn that he has been confined to his home through illness for the past week.

Showing a big improvement in their passing game and in floor work, the Laurentide A.A.A. basketball five triumphed over the fast McGill University team, February 19th, at Grand'mere, by a score of 37 to 30. The game was hotly contested and cleanly played throughout, and provided plenty of interest for the crowd that filled the gymnasium.

When the Public Accounts Committee meets in the Ontario Legislature next Wednesday, Hon. Howard Ferguson will question the Provincial Auditor and R. T. Harding regarding the item of $50,000 accountable expenses of the Timber Commission. Hon. Mr. Ferguson has moved that the auditor be ordered to bring all accounts and vouchers and that Mr. Harding produce books vouchers and receipts.

Mr. Martin Anderson, of Port Arthur, who was in Toronto last week, reports wood operators getting out sawlogs, pulpwood and ties in the Thunder Bay and Rainy River districts as watching the weather signs with deep concern. Enormous losses will be entailed in the event of an early spring break-up, as large quantities of timber products would be left stranded in the woods and smaller contractors ruined. Lack of snow for normal hauling already has so handicapped operations in the camps that instead of calculating prospective profits, the contractors are hoping for no more than an even break on their season's work.

The Brown Corporation has bought Dansereau Island, in the mouth of the St. Maurice River, where preparations will be made to receive and saw the wood floated down the river. The building of the mills of the company at Ste. Angele, across the St. Lawrence will begin this spring.

The pulp mill of the Bathurst Lumber Company, which closed down at Christmas, has resumed operations. Angus McLean, manager of the company, points out that it had been found absolutely necessary to reduce wages, an all-round cut of twenty per cent having been made. While regretting the necessity of adopting that course, Mr. McLean said that it had been merely a question of cutting the wages and attempting to operate, or keeping the mill closed altogether. In the present condition of the market Mr. McLean explained that even with the reduced wages in operation the company stood to lose $27.50 a ton, as it would cost them that amount in excess of the market price to produce their commodity.

Mr. W. S. Cummings, of the Chemical Paper Manufacturing Co., Holyoke, Mass., was a business visitor in Toronto last week.

There have been some cases reported of supposed "dumping" of Genuine Vegetable Parchment Paper into Canada. This is contrary to the Canadian Law and such matters are investigated by the Customs Department. In days of slow business there is apt to be dumping of foreign made products into another country, and there have been cases reported of this being done in Canada, which matters should be promptly investigated.

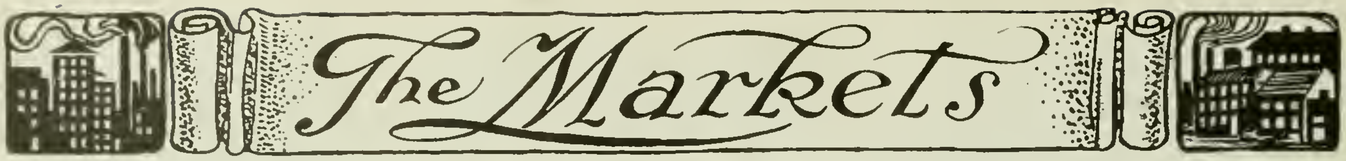
Mr. F. H. Johnson will assume the duties of superintendent of the new sulphite mill of the Spruce Falls Company about March 18th. He comes from the Niagara, Wis., mill of the Kimberley-Clark Co. Needless to say Mr. Johnson is welcome to Canada.

Mr. John Hewitt, Jr., of Paper Sales, Limited, Yonge Street, Toronto, has returned from a business trip to Chicago and other western cities.

The Northern Foundry and Machine Co. Limited, Sault Ste. Marie, have recently issued a bulletin on their Double and Single Suction Pumps and Acid Resisting Bronze Fittings, copies of which can be had from their engineers and sales agents, Clayton, Neil & Jones, Ltd., Power Building, Montreal and at 152 Bay Street, Toronto.

Both the W. J. Gage Company and the Kinleith Paper Co., which held their annual meetings last week in Toronto, reported a satisfactory year's business. The officers of the W. J. Gage Company are H. H. Love, president; H. F. E. Kent, vice-president and A. G. Parker, secretary-treasurer. The officers of the Kinleith Paper Company are: President, H. F. E. Kent; vice-president, H. H. Love; treasurer, A. G. Parker; secretary, George H. Jefferson. It was stated at the meeting of the Kinleith Paper Co. that twelve dryers were being added to one of the paper making machines at St. Catharines which would be in operation in about three weeks time, and which would materially increase the output of the mill.

Mr. C. R. Whitehead, president of the Wayagamack Pulp & Paper Company, has returned from a business trip to England.



The Markets

CANADIAN TRADE CONDITIONS

Toronto, Feb. 26.—Stocks of paper in the warehouses are gradually being reduced in consequence of somewhat improved trade conditions, although generally speaking the volume of business being done is small. There are encouraging signs, however, and these are seen in more enquiries and slightly larger sales in some lines of paper than have existed for some weeks. It is believed that the stage is slowly being reached when printers and consumers will have to come into the market again and replenish their stocks and there are already some indications that this is being done. The mills, however, are said to be rather slack under the lessened demand and adverse power conditions and tonnage has fallen off considerably in some lines. The market for raw stock is still down and the pulp transactions are few in number and small in volume. The printing trade is showing some signs of improvement but printers are not stocking any and are buying for immediate requirements only. As a consequence most jobbers are doing a good counter business but the big orders either locally or for shipment are small.

The market for books, bonds and ledgers and most other lines is in a very unsettled condition and so far the efforts of the jobbers to cooperate with the manufacturers to get prices down to something like a stable and permanent basis, consistent with costs, have not borne very much fruit. Jobbers complain that some of the manufacturers are going over their heads in the matter of sales and there are said to be cases where the printer is being sold direct. The jobber holds that he should be given the benefit of fixed prices and if there are any reductions he should be the one to pass it on to the consumer. One jobber, who does not believe in mincing words, says that the paper manufacturers have not yet come down from their high position as barons in the trade, to which they were elevated during the big paper boom, and he declares that they should be re-educated after the manner of the returned soldier. So far, he said, it had been found impossible to get them to fix a basic price on anything and they were still trying to meet competition irrespective of cost. As a result the jobbers did not know where they were at in regard to prices—nor would they until the manufacturer ceased "hunting with the hare and running with the hounds," and the jobbers are afraid to buy. There was, he said, too much lack of faith and confidence between the manufacturer and the jobber.

KRAFT AND WRAPPINGS.—Manufacturers of kraft paper, who have been passing through an extremely quiet period, report that conditions are gradually improving, and the situation is made better by reason of the fact that there are no large stocks of paper on hand either at the plants or in the hands of the jobbers. Considerably more enquiries are coming in and the orders are increasing in size. The Wayagamack mill has not yet completed its renovations, but expects to be running again in a few days now. Kraft paper is still quoted at $11.50 and pulp at $115. Wrapping paper jobbers say that stocks are gradually becoming levelled out, with the exception of some odd lines, and that there are signs of a picking up in business generally, with many more enquiries and a few more sales. There are no changes in prices.

COATED PAPERS.—The coated paper mills are running at capacity and some of them are still working on back orders. The paper depression has not reflected itself on the coating mills to any extent and there is a fair demand for its product.

TISSUES AND TOILETS.—Business is still extremely dull in tissues and toilets and light weight papers generally and the market is very unsettled in consequence of a certain amount of price-cutting that is taking place. As a consequence the mills are operating under a handicap and with the demand considerably off they are having some difficulty in disposing of their tonnages. Better things are looked for within the next few weeks, however, and there is a general feeling of optimism in this branch of the trade.

PULPWOOD.—There is little change in the pulpwood situation in Quebec and Ontario. There is quite a large stock of wood which is now being hauled out in Quebec but the demand for it is very limited and there is a reluctance on the part of the mills to contract for their supply of wood just now—a condition that prevails in all lines of trade. A Quebec company informs the Pulp and Paper Magazine that they are receiving some enquiries for quotations, which would indicate that mills are now beginning to take in hand the matter of purchasing their supplies of pulpwood. The firm mentioned is inclined to believe that just as soon as business conditions are normal and stable, pulpwood prices will improve. Taking into consideration the high cost of pulpwood during 1920, the price today is down now to a very reasonable price—practically the actual cost, plus a reasonable profit for stumpage and carrying charges, which would lead to the conviction that the present is the right time for the mills to step in and pick up a supply of wood at a low figure. Pulpwood is quoted at $30.00 F.O.B. cars Watertown.

RAG AND PAPER STOCKS.—The new cotton cuttings market has continued easy in tone on account of the absence of the worth while consuming demand. Inquiries from mills have been reported on occasions, but the price offered has generally been a prohibitive figure for dealers unless they are to obtain their cuttings from packers at considerably under present levels. Prices have, as a whole, been nominally unchanged. The waste paper market has been rather a slow affair, and prices still show some measure of instability. Most of the mills are buying just enough stock to keep their mills running, and in no cases are they stocking up for they believe they will be able to secure material at the present prices for some time to come.

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NEW YORK MARKETS.

New York, February 26—(Special Correspondence)—In point of demand from consuming quarters, there is very little improvement apparent in the paper market. Buyers are still operating in hand-to-mouth fashion, coming into view only when actually and immediately in need of supplies and then confining orders to paper directly required. There are no indications in any quarter of anyone being willing to anticipate forward needs, and, individually and collectively, current sales involve but light amounts of paper. Jobbers in New York and in other large distributing centres seem determined on keeping their stocks as low as possible and are ordering from mills merely when having orders in hand from their own customers. The printing industry here is experiencing unusual dullness and this accounts in a large measure for the lack of important demand for various kinds of paper, especially fine and book grades. Owners of print shops assert that the high cost of printing, due to the excessive wages they are obliged to pay their help, is partly to blame for the prevailing quietness in their line, and are seeking to effect a cut in the wage scale. A meeting of employing printers in New York was held this week at which this matter was discussed, and as an outcome of this conference the printers' union is being prevailed upon to consider a wage reduction, it being pointed out that if printing can be produced cheaper everything favors more work for the industry.

Reports from paper producing centres continue to tell of unfavorable conditions existing there. A majority of paper and board mills are shut down or are operating on greatly curtailed schedule, and the few running full are reported rapidly catching up with their orders with new business developing slowly. Paper manufacturers are wisely closing down their plants rather than continue operating to pile up heavy stocks of their product. This is indeed a satisfying condition in that it means that when demand broadens it is unlikely there will be any excessive surplus of paper to weight down the market.

A consensus of opinion now is that considerable improvement in market conditions will come about by the middle of March. Encouraging activity in other commodity lines leads paper men to expect matters in their trade to pick up soon after the inauguration of the new administration in Washington, and in the meantime nearly everyone making or dealing in paper is pursuing a waiting policy pending developments.

The newsprint market is at best in an easy position Demand for spot supplies is close to nil and the surplus of paper on the market naturally has a weakening influence on prices. It is difficult to say just how low newsprint can be purchased. There have been reports of sales down to 5 cents per pound, yet it appears doubtful whether any sizable tonnage can be secured for spot delivery at less than 5.50 cents. The latter figure is the approximate market basis agreed on by representative members of the trade, who, however, admit that probably "distress" lots can be obtained at lower prices.

An encouraging feature in the newsprint trade is that those publishers who when domestic paper was high in price and hard to get contracted ahead for European newsprint are now endeavoring to resell their imported stock to replace with domestic or Canadian paper. The reason for this is that the foreign newsprint has given poor satisfaction, and it is definitely known that in certain cases publishers have sold imported paper at a loss and covered requirements with domestic newsprint which is now freely available. The experiences of these publishers, which are being openly related in the trade, should discourage the further importation of newsprint from Europe.

Book papers are moving slowly except on contract and prices are still receding. Machine finished book is now available at 9.50 cents, and some mills are quoting even lower figures. Super book is offered by mills at 11 cents, while coated books is quoted at from about 13.50 cents upward. The sharp decrease in advertising, resulting in less consumption of paper by magazines and other periodicals, explains the reaction in the book paper market, but confidence is felt that when business generally improves advertising will pick up, thus making for a heavier consumption of paper.

The board market rules weak and mills in frequent instances are selling at prices below the cost of manufacture. Several of the eastern mills have marketed plain chip board in New York this week at as low as $30 per ton delivered and filled news board at $32.50, which is unquestionably under the basis at which board

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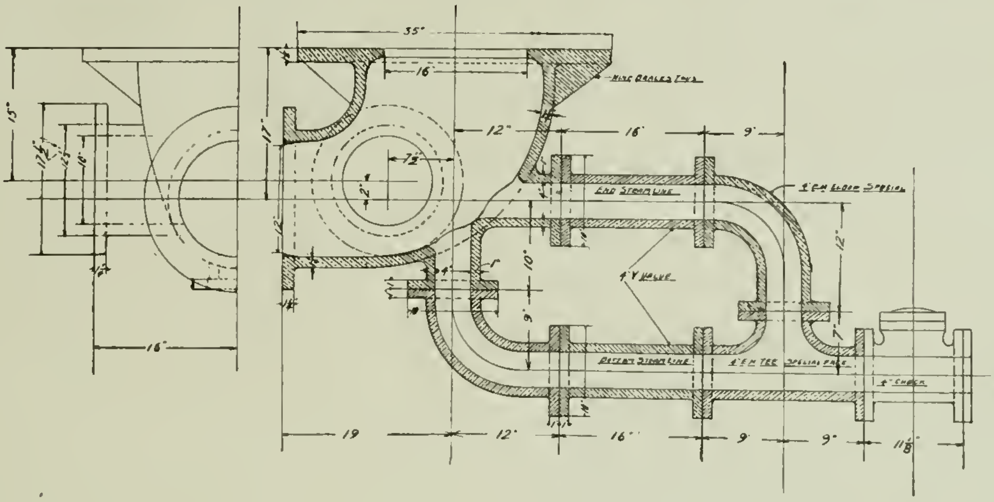

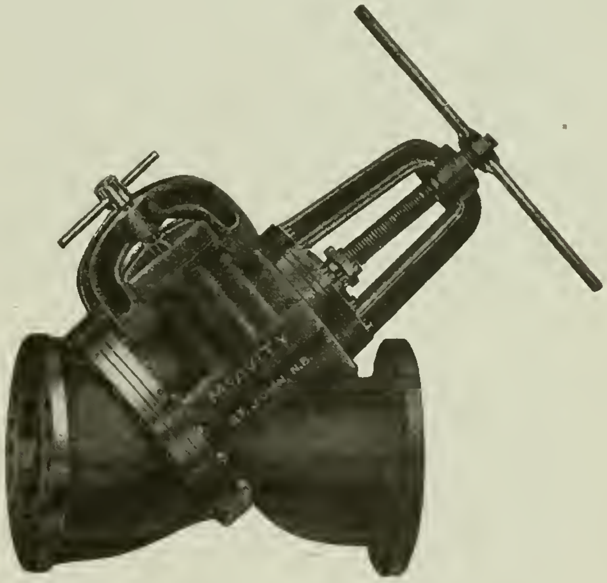

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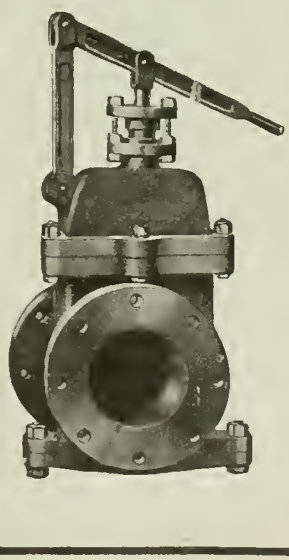

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can be made profitably today. Manufacturers are exerting every effort, however, to keep running and maintain their mill organizations, which accounts for them selling board so cheaply.

Fine papers are in slack demand with what little buying is being done involving in the main the lower qualities. About the lowest price named on bond paper is between 12 and 13 cents per pound at mills, while more popular lines and fetching around 17 cents a pound.

GROUND WOOD.—Mechanical wood pulp is moving in small quantities and prices are on a broad range. Figures all the way from $45 up to $65 per ton are quoted in different parts of the trade and it is difficult to say just what constitutes the market value of ground wood today. Actual sales at $45 have been recorded, yet representative producers in some cases are asking $60 and $65 at mills and are refusing to sell for less, claiming that present manufacturing costs do not justify their doing business at lower prices levels. Board mills are buying very sparsely and this accounts largely for the dull demand, as this class of consumers are ordinarily among the the most important buyers of pulp in the open market. Producing plants are reported closing down, and there is no great amount of selling pressure despite the slack demand coming from consuming quarters.

CHEMICAL PULP.—Chemical wood pulp is meeting little worthwhile demand. Papermakers explain their lack of buying interest by the dullness prevailing in the paper market and the resultant shutting down of mills, and aside from shipments on contract and an occasional sale of small tonnage at sacrificed prices, there is practically no business doing in pulp. Prices are in the main nominal. Mill agents and importers are themselves at a loss to say what can be obtained for the different grades of pulp, having no established basis to guide them, and are mostly holding off from trying to effect sales until consumers evince more interest.

RAGS.—Prices on new cuttings are tumbling at a rate probably never before witnessed. The situation in this end of the papermaking rag market is very nearly demoralized, and offerings of some grades have been reported denoting sharp recessions. Even at the reduced prices mills have shown scant desire to buy, it being their contention that they are not in need of stock at present and not being willing to absorb supplies on a declining market. No. 1 white shirt cuttings, it is authoritatively stated, have been secured by mills at as low as 13 cents per pound delivered, while No. 1 washables are offering at 5.50 to 6 cents a pound f.o.b. shipping point, white lawns at 12 cents, unbleached muslins at 11.50 cents, new blue overall cuttings at 8.50 cents and new light silesias at 8.50 cents. Old rags tend lower but there has not been the decline recorded as has marked new cuttings. Roofing rags are holding fairly at around a cent per pound at shipping points for No. 1 packing, and some felt mills display willingness to contract ahead for supplies at this basis. Old whites rule unchanged at last week's levels, and thirds and blues, while strictly nominal in price, are at about previous quotations. The market in its entirety lacks important activity and everything appears in favor of further decline in values unless demand from consuming sources broadens considerably.

PAPER STOCK.—The market for old paper continues in the doldrums. There is but a slight movement into consuming channels and the aggregate amount of any one grade being absorbed by mills is not sufficient to sustain prices, with the result that values are steadily seeking lower levels. Numerous small packers are reported shutting down their plants and looking for other forms of employment, it being contended that there is no profit in collecting and grading paper to be sold at today's market prices. In spite of this, supplies are in excess of buyers' wants and those in the market are succeeding in getting stock at almost any figure within reason they offer.

Sales of No. 1 soft white shavings to mills at 3.25 cents per pound f.o.b. New York have been reported, while hard white shavings of No. 1 quality have sold at 4.25 cents, heavy book stock at 1.50 cents, white news cuttings at 2.25 cents, old No. 1 kraft paper at 2 cents and ledger stock at 2.25 cents. Folded newspapers are offered at 57½ to 60 cents per hundred pounds with few takers, while No. 1 mixed paper is freely available at 40 cents per hundred. Ordinarily in dull times there is a demand for some kind or another of paper stock but today there is no grade wanted, and dealers say that never before have they witnessed the situation quite so unsatisfactory.

OLD ROPE AND BAGGING.—Inquiry for old rope is fair although consumers have not as yet increased their buying to any material extent. Quotations range around 4 cents a pound for domestic Manila rope in No. 1 condition, while mixed strings are quoted at about a cent a pound at shipping points. Demand for bagging is at a standstill and prices are altogether nominal.

PULP AND PAPER HOCKEY.

Monday night was an exciting time for the hockey fans at Victoria Rink, Montreal. The Pulp and Paper League has but one more regular game this season and interest in the outcome is intense. Abitibi has been playing consistently good hockey, but misfortune was with the team till this week, when they beat the strong Riordon team 2 to 1. Howard Smith Paper Mills beat C. M. Dawson 3 to 1 and Canadian Export Paper Co. walked on McFarlane, Son and Hodgson 4 to 0. A crowd of 1,500 jammed the spectators' portion of the rink.

A great game occurred last Thursday night, when the La Tuque (Brown Corp.) team, after winning the pennant of the St. Maurice Valley was defeated by McGill, 6 to 4.

UNITED STATES NOTES.

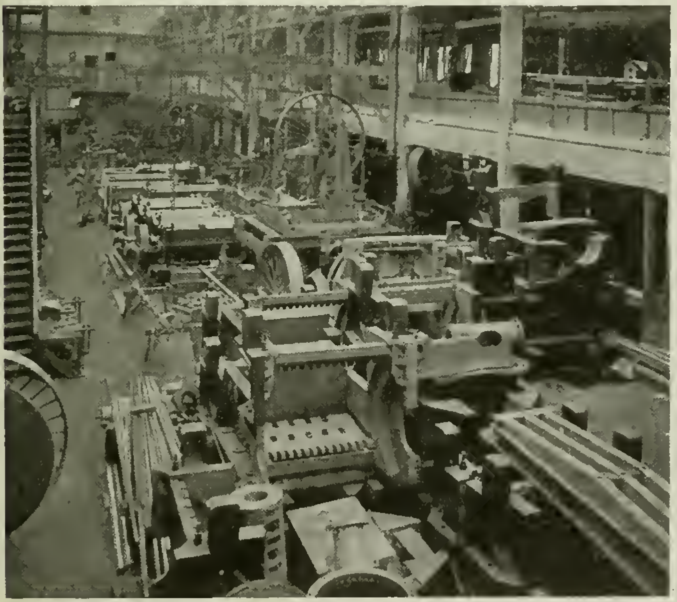
While as yet there is but one small pulp mill in actual operation in the vast timber areas of Alaska, a report from Seattle indicates that capitalists, both in Alaska and elsewhere, are scrambling to obtain permits to develop the water power of the North. A total of 143 such applications had been received by the Federal Water Power Commission up to the beginning of the year, and dozens more since. It is predicted that the outcome of the year's activities will result in the establishment of at least three pulp plants among the numerous projects now in course of development.

Matters of unusual importance are due to come up at the annual meeting of the Boston Paper Trade Association, scheduled to meet in Boston March 16. The committee in charge of arrangements has plans for the gathering well under way and is making every effort to secure attendance by most of the members.

News From Our Advertisers

AN EARLY MANUFACTURER OF PULP AND PAPER MACHINERY.

That size of plant or quantity of output is less of a factor than a reputation for continuous production of high class machinery and the ability to manufacture under efficient and economical conditions is the impression the editor got from a recent visit to the plant of Waterous Engine Works at Brantford, Ont. The views shown in the accompanying illustrations give but faint idea of the equipment in the main machine shop. It will be seen that there is a spacious main floor surrounding which is a gallery where all the smaller work is carried on and the light machine tools are located. It happened that a shipment of beaters had just been made so the usual amount of paper mill work was not at the time in evidence, but a number of pulp screens were under construction. These were the well-known Quiller type in which it was noted that a very considerable improvement had been made in the latest types of runner by which a much more rapid and more uniform distribution of the stock is obtained. A number of these screens were seen in various stages of completion. Besides this work which was actually under way, the facilities were seen for the manufacture of open frame flat screens, grinders, chippers, deckers, and wet machines. Many other machines of interest to the paper maker which the Waterous Company was found to be equipped for making should be noted; various items of logging and wood preparing apparatus, variable speed and other types of engines, magazine grinders, defibering apparatus, etc.



Main Floor of Machine Shop, showing Three Rotary Screens under construction.

The plant is provided with up-to-date facilities for making its own castings and an electric welding outfit was also noticed.

Several departments of the plant were considerably disjointed by the large amount of military work done during the late war and in changing back to the manufacture of peaceful products, the opportunity has been taken for installing more modern machinery and making a more efficient arrangement of equipment.

Several generations have been building the reputation of the Waterous Company and it is gratifying to see the younger members continually coming in and taking an interest and an efficient part in the further growth of the company.

A View of the Foundry.

NEWS FROM EUROPE

Russian Notes.

Flax was one of the most important Russian industries. Clear evidence of the state of the country is afforded by the harvest figures. Before the war the annual production of flax in Russia was 20 million pouds, (1 poud=about 39 lb.) while the 1919 harvest was only 4.5 million pouds. This year's harvest will be even smaller. There is no inducement to grow flax, as there is no market.—Zeitschrift für angew. Chemie, December 23, 1920.

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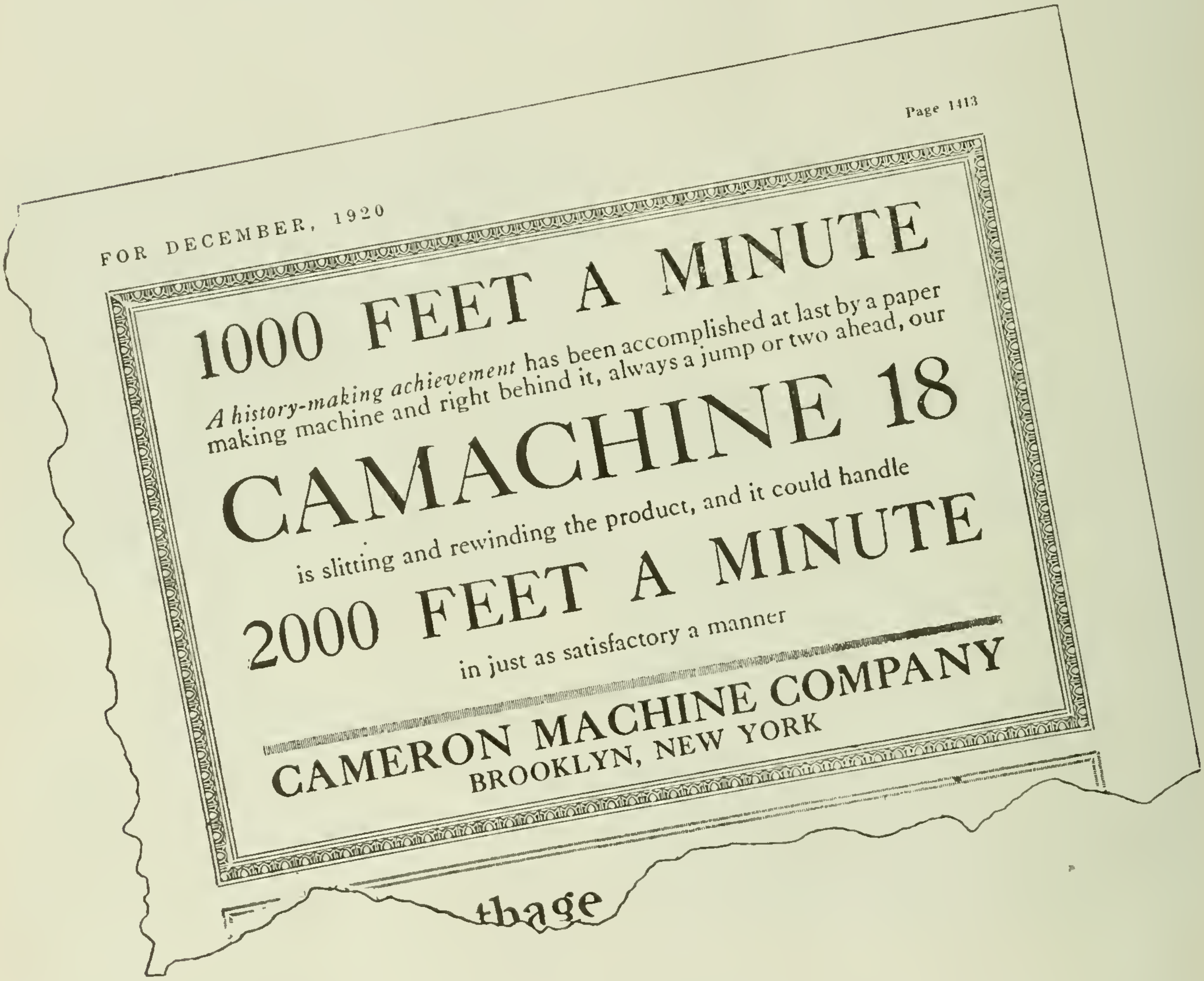

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VOL. XVIX. **GARDENVALE, P. Que., March 10th, 1921.** **No. 10**

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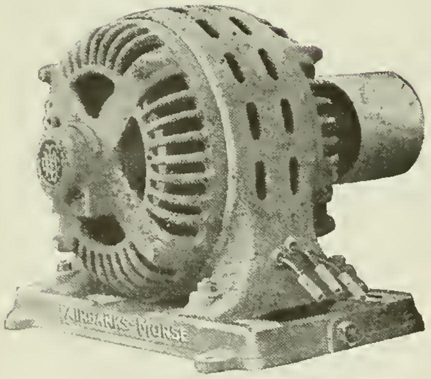

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EDITORIAL

IN THE GAME.

It took us some time to decide on the title for this editorial and have come to the conclusion that "In the Game" expresses both the facts and the policy of the Industrial and Educational Publishing Company with regard to their attitude toward the paper making fraternity. When we say we are in the game, it means that the publishers of the Pulp and Paper Magazine and the other periodicals printed at the Garden City Press at Ste Anne de Bellevue, decided some time ago to establish a paper mill to supply their own needs and possibly at times have a little to spare. It might be well to state briefly the present extent of the operations of our company in the publishing field. At the Garden City Press the company own and publish besides the Pulp and Paper Magazine, the Canadian Mining Journal, which is also weekly, The Canadian Textile Journal, which is by-weekly, The Canadian Fisherman and Iron and Steel of Canada which are monthlies, and the Canadian Bookman, a quarterly; besides these they issue the Journal of Commerce every week, the Teachers' Magazine monthly, the MacDonald College Magazine quarterly, the Bulletin of the Canadian Mining Institute monthly and the United Farmers' Guide with its circulation of nearly 20,000 weekly. From the Toronto plant which is situated at 263 Adelaide St. W. an immense amount of job printing is done, including the work of several well-known Canadian publications of large circulation.

The Industrial and Educational Publishing Co. have already felt the need for undertaking the publication of books and that development will of course, require more paper, while their magazine printing plant has grown steadily. On moving here from Montreal barely two years ago, the printing capacity was increased 100 per cent and another 50 per cent had to be provided for at the beginning of this year. What seemed to be very commodious quarters are already showing signs of becoming crowded so that further building of the printing plant will doubtless be necessary before another year has passed. To arrange for such a supply of paper as will be required by the ultimate need of their presses, it seemed entirely the proper thing for the company to establish their own source of supply.

There are many advantages in the location at Ste Annes for the manufacture of magazine papers. In the first place the Company have a large piece of ground immediately adjoining the railway where it will be convenient to join the Grand Trunk and the C. P. R. lines with an inter-switch and an extension of the present freight siding will put the track right alongside of the building it is proposed to erect this summer. The mill would be within twenty miles of Montreal which will be a convenient and adequate market for the waste papers that will be the principal source of the fibre. Being on the two principal railway lines and also but a few hundred yards from the Ottawa River Canal system, it will be easy to bring sulphite, coal, clay and other materials by boat—a very convenient means of transportation. Being also on the direct road to Toronto, they can conveniently ship to the Toronto plant. An electric truck can bring the paper from the finishing room of the mill to the press room of the Garden City Press in a very few minutes as the two buildings will be hardly more than a hundred yards apart.

The slope of the land owned by the company will make the construction both economical and satisfactory. Comparatively little excavation brings us to solid rock which is just the right level below the railway siding. It is probable that oil fuel will be used so that the whole plant can be most easily maintained in keeping with the character of the community in which are located besides the Garden City Press, The Military Hospital and MacDonald College. The general layout of the mill calls for a paper machine room with basement about 70 by 250 feet; across one end of this, towards the railway, will be the finishing department in the receiving floor housed in a building about 60′ x 120′ and probably of four stories. Across the other end will be a building of similar size for the de-inking plant and fibre preparation. The dry end of the machine will naturally be adjacent to the finishing room. The power plant will be located in the corner made by the machine room and the fibre preparation building. The mill is being planned to accommodate a second paper machine when this becomes necessary.

The company had not contemplated quite such precipitous entrance into the manufacture of paper but the site of the Wanaque River Paper Company at Wanaque, N. J. was condemned by the Public Service Corporation of that state because the location was required to be included in the area to be flooded by a new reservoir. The whole plant was obtained on terms which made it advisable to go ahead immediately with the proposition. The intention is to break ground as soon as the frost is out and proceed to build the mill and install the machinery. The use of electric power will make it unnecessary to bring to Canada some of the equipment which is included in the bill of sale and a possible re-arrangement of some of the departments, because of the balance of roll and sheet paper required by the Company's activities, may also eliminate some of the other machinery. At any rate it will be some months before the plant is in operation again in its new quarters and we are hoping, even anticipating, that before that time the aspect of the paper situation will be much brighter than it is at the present time.

It may be said in conclusion that the decision of the Industrial and Educational Publishing Company to make their own paper is brought about largely by the rapidity of the growth of their enterprise, which will be further facilitated by eliminating most transportation difficulties and other uncertainties due to the somewhat parallel growth of other publishing houses has been putting quite a strain on the present sources of supply. This company has always enjoyed and appreciates the happy relations with and many courtesies from the manufacturers from whom our supply has been obtained for many years and we are sure that getting into the game will only serve to bring us in closer contact with our good friends and no doubt enable us to understand more fully the difficulties which at times have made it hard for them to accommodate all our desires. Things have happened so fast in the last two weeks that a great many details have not yet been worked out but such information will be forthcoming as it becomes available.

FAITH IN THE FUTURE.

The Industrial and Educational Publishing Co. believe in the future of Canadian literature. To aid in encouraging and inspiring those who have genius or ability in the art of letters, the company publishes, at the Garden City Press, the Canadian Bookman, under the editorship of Mr. B. K. Sandwell. Progress is made by organization and co-operation, so the Canadian Bookman has arranged for a convention in Montreal, March 11 and 12, of authors and others interested in the development of Canadian literature.

COBWEBS.

This is getting to be quite a personal page, but it wouldn't do to pass an event that means much to those at the Garden City Press. The United Farmers' Guide with its large circulation and important constituency saw fit to adopt our plant at Ste. Anne de Bellevue for its place of publication. To express a hearty welcome to this important weekly and to introduce the owners and editors to their new friends and associates in this district, the staff of the Garden City Press entertained at dinner at the New Clarendon Hotel at Ste. Anne de Bellevue last Friday evening. Nearly 200 guests were present. Hon. W. S. Fielding presided and Hon. T. A. Crerar, president of the great Grain Growers Association was the principal speaker. Mr. Chipman of the Grain Growers Guide, Winnipeg, and Col. Archibald of the United Farmers' Guide described the growth of farmers associations and representatives of other Canadian industries were called on. The meeting was distinctly non-political; scarcely a reference was made to matters of government.

Canadians have reason to be proud of the accomplishments of our paper makers. Our newsprint and pulp mills have been acknowledged to be in the forefront of progress. Now our fine paper mills have produced achievements worthy of a much older industry. The Howard Smith Paper Mills commemorate their "extra strong" grade in a beautiful booklet. They have also sent us samples of their blotting papers, a new line for Canada; it is very thirsty blotting. Our other Quebec friends, the Rolland Paper Company have also issued a new catalog of their excellent papers. Canadians have no excuse now for going elsewhere for any grade, to the very best, of regular lines of paper.

The campaign against venereal diseases, which is being waged by the Quebec authorities is most commendable. The coming generation, if it takes hold will contribute more leaders of thought and fewer inmates of asylums.

In one year's operation of the plan of Group Insurance, the dependents of men employed in the Spanish River Company received $12,250 in death benefits and in the short time since its inauguration by the Belgo Canadian Company, two claims totalling $2500 were paid. A few years ago these widows and their children would have been in a much sadder plight. The world "does move," as the ancient astronomer said.

The astrologers say that March, which is the month of Aries, the Ram, is a month of energy and progress. The "Amphibian" calendar adds that far-seeing men will meet with success this month. That is our idea—in order to meet with success one must be on the look out for it.

Remember, all through 1921, that "Made in Canada" means "Paid in Canada."

This soft weather will make it bad for getting out pulpwood and timber.

"ELECTRIC PAPER DRYERS."

In its issue of February 25th, the St. Maurice Valley Chronicle writes under the above heading, as follows:

"A lecture of great interest to paper manufacturers was given at the Technical School Thursday afternoon at 4 o'clock on the subject of electrical dryers for paper. The Laurentide has already installed a machine of that kind, and it is understood that the method is very successful."

What really occurred was told in the Pulp and Paper Magazine last week.

The Laurentide Company have issued a very fine brochure entitled "A Few Facts About the Laurentide Co., Limited." It describes briefly the principal departments and activities of the company and is nicely illustrated.

A little sunshine now and then, is relished by the best of men.

Fitting the Foreman for his Work

Realizing the importance of the trained foreman in the executive duties of his position, the Pulp and Paper Magazine asked the Business Training Corporation to describe a few instances of what such training can accomplish. Other concerns engaged in this work have had similar results.

The paper and pulp industry has gone through so many fluctuations during the past ten years that it has held out a constant invitation to "business doctors" to help it over its periods of stress and strain. First there is a campaign to modernize equipment, then to raise efficiency and reduce costs, then to stimulate production, then to harmonize industrial relations, etc., etc. When labor is scarce and demand is heavy, "production at all costs" is the watchword. Manufacturers are driven to radical expedients to placate labor and are tempted to grasp at Utopian schemes of industrial democracy proposed by social dreamers in order to keep peace in the family. When the conditions are reversed and labor is begging at the gate for employment another set of grim-faced specialists are knocking at the door to advise the manufacturer on reducing wages, fighting unions, and turning his shop into a cold-blooded but efficient piece of mechanism.

While many manufacturers were yielding to the hysteria produced by these extreme conditions, trying to take advantage of temporary ups and downs through the use of patent nostrums, others have been calmly getting their house in order on a permanent basis by putting all of these problems of production squarely up to the logical man—the foreman on the job. After all, what problem is there in manufacture—be it industrial relations, safety, lowered costs, better quality, wage adjustments, increased production, or anything else—which will not ultimately yield to the ministration of intelligent, broad-gaged, energized foremanship? The right kind of a foreman is usually able to keep his team functioning harmoniously, smoothing out misunderstandings among the men, and stimulating them to better effort. If a wage reduction is necessary he can "sell" his men on the idea because he has their confidence. If an improved system of costs is introduced, better methods of routing and despatching are worked out, the foreman is the man who makes these plans succeed or fail. If he has a clear understanding of the principles on which efficient production must rest, he can then cooperate intelligently with the planning and engineering departments.

Few will gainsay that the key to most improvements in the shop is the foreman and that if a plant had nothing but able foremen and assistants there would be much fewer labor troubles and more economical production. The only trouble is that the average foreman does not measure up to these requirements. And this is not entirely his fault. The mere act of loading responsibility on a man does not necessarily qualify him to discharge them effectively. In the normal paper mill, for example, a workman perfects his craftsmanship over a period of years, gets a reputation of being conscientious, reliable, and efficient, and then one day the superintendent calls him to the office and says, "Jim, I have decided to make you foreman of the— Department." The next day Jim takes on his new duties with an amazing amount of ignorance about every one of them. He may have a genial personality which enables him to get along pleasantly with the men under him. His knowledge of the machines and processes comes in handy, but his executive ability, never having been developed, breaks down at the slightest strain that is put upon it. Instead of being a workman with nothing but his own job to think about, he is now a representative of the management and has to carry out its plans and policies. These duties are so different from the ones he formerly had that several years are usually taken to get adjusted to them and in many cases the adjustment never takes place. As for constructive work, he usually has such a hard time catching up with the many requirements of his job that he never develops the ability to put new ideas into it.

It is only recently that this state of affairs has been clearly realized by manufacturers and steps taken to correct it. Since it has been found that investments in improved equipment and industrial engineering can only be made profitable by having enlightened foremen, plant managers have been addressing themselves to the fundamental problem of training their key-men in an endeavor to make real executives out of them. Sometimes this training effort takes the form of occasional plant gatherings at which the boss tries to explain the policies and methods of the concern. Such experiments have helped create esprit-de-corps, but they naturally do not get very far in educating the men. There has been a growing conviction that the training effort should be well organized and systematic, requiring a definite line of study for the individual, in addition to an opportunity for group discussion.

A movement of this kind which has had gratifying success in the States and is now getting a good foothold in the Dominion is represented by the Course in Modern Production Methods given by the Business Training Corporation of New York. By means of especially prepared text material, written work, and lectures, the foremen are given a three months' intensive group training on the subjects of teamwork, handling men, organization, costs, control, and management. The reading of the text material provides the instruction in basic principles and the men apply these principles to concrete factory situation that are presented to them in the form of problems. Their solutions are forwarded to a central staff for comment and criticism and are discussed at the group meetings which occur bi-weekly. The instruction is simple and stimulating, and is tied up closely to the problems that confront the average foreman in discharging his daily duties.

Already over 25,000 foremen in 400 plants have gone through this course, the majority of them having done all their prescribed work to win their certificates. The results in some of the paper plants have been especially gratifying. A few instances might be cited to show the effect the training has upon the minds of the men.

In the case of a paper company in Kalamazoo, Michigan, a foreman who had left the trade was induced to return to assist in the shipping room. He was just completing the Course in Production Methods while the other foremen were starting with the course. As soon as he took up his position, he put a crew at work to open up the shipping department, which was blocked, and where they were not able to get the orders out. He found that by the use of a sharp knife in slicing the paper rolls he was able to save a large amount of "Broke" which had become so because of the use of the hook, which simply tore the paper off the roll without giving an opportunity of saving any of it. The larger pieces thus saved were put into stock, the remainder being cut up as samples.

He had doors cut through the partitions of those parts of the plant which adjoined the shipping room, saving a great deal of unnecessary hauling and greatly facilitated the removal of the rolls to the shipping room. It had formerly been necessary to carry the rolls long distances because of a lack of a direct route to this room. With the cleaning up of the shipping, the operators of the Fourdrinier machines saw that they had been caught up with, and whereas before this was done the output per machine per day was 22,000 pounds, the first day after this stimulation the increase went to 56,000, the second day to 60,000, and the third day to 72,000, the average since being over 60,000 pounds. This was due, so their General Superintendent says, to the interest in the work of the course which had inspired the foremen to greater accomplishments in their respective positions.

There was also an additional saving in the amount of wires used for repair work on the machines, due to better attention paid to the work by the operators.

In the case of another large concern there had been a great loss on account of paper being processed incorrectly a long time before it had been discovered, when a little attention and watchfulness would have resulted in the finding of the error and earlier correction thereof. Employees here took the course, and the firm felt a great many times repaid because of the increased efficiency resulting.

There is a pulp and paper concern in Ohio which has been enabled to work out a system of charting the exact daily production, spoilage, and cost for each department through the initiative of the foremen themselves. As a result of the group meetings the foremen proposed to the management that these charts be started so that each man could watch the operations in his department closely with the view of bettering their individual records in production. The management had been keeping these records themselves for some time, but they now find that more rolls are coming through good and t ehunit cost has been reduced while the total output has been increased with a smaller employment than last year. They attribute these results to the interest taken by the foremen in their daily records and the new appreciation which the foremen have of overhead expense.

Scores of other instances might be cited, if further proof were needed that improved foremanship helps to better production standards. By getting all the keymen in the plant together, including some of the "white-collar" fellows in the office, and giving them an intensive study of production methods as applied to their own manufacturing problems, more teamwork and more economical operation should inevitably follow.

Some of the paper concerns appreciating benefits from such training are the American Writing Paper Company, Crocker Burbank Paper Company, Bird & Son, Mead Pulp & Paper Company, Falulah Paper Company, Robert Gair Company, Monarch Paper Company, Continental Paper Company, and Richardson Paper Company.

Slight damage was caused by fire in the Herald Building, Craig Street, Montreal, on Sunday evening, when flames broke out in several boxes of waste paper and rags in the shipping room in the rear portion of the third floor.

BRAZIL CANCELLING ORDERS IN THE UNITED STATES.

The steady rise in the value of the American dollar in Brazil on terms of milreis is causing increasing apprehension among Brazilian importers as well as among the American suppliers, who view with alarm the probability of large cancellations of merchandise arriving from the United States, according to Assistant Trade Commissioner R. M. Connell.

It has been claimed that the fundamental cause for the majority of the cancellations already suffered was late delivery by the American manufacturers, but further developments have proved that the prevailing exchange rates have been more influential in determining such action. Articles nominally paying ad valorem duties of 50 per cent have recently been assessed nearly as hight as 100 per cent, while in addition the Brazilian importer must pay almost twice as much in milreis for dollars to meet his obligations in the States as he had to pay a year ago.

Together with this distressing situation the buyers' action in cancelling American orders is undoubtedly influenced by the very low offers being by German exporters attempting to re-enter the Brazilian market, who it is reported are quoting prices on some articles 60 per cent below New York quotations and 65 per cent below London prices.

While it is doubtful if German exporters can deliver according to contract yet this is an additional disturbing element in the situation which some importers have to face.

PRICES OF GENERAL CHEMICALS

Current Wholesale Prices in New York Market, Week of February 23, 1921.

	Carlots	Less carlots
ACID, acetic, 28 per cent.—100 lbs.	3.00 — 3.25	3.50 — 3.75
" acetic, glacial 99½ per cent carboys—100 lbs.	10.50 —11.00	11.25 —11.50
" Hydrochloric—100 lbs.	1.60 — 1.75	1.85 — 2.25
" Sulphuric, 60 deg., Drums—ton..	— —	14.00 —-5.00
ALCOHOL, Ethyl—gal ..	— —	5.25 — 5.50
" Methyl (see methanol)	— —	— —
" denatured, 188 proof—gal... ..	— —	.54 — .57
ALUMINUM sulphate, commercial—lb.	.02¼— .02½	.02¾— .03
" sulphate iron, free—lb.	.03 — .03¼	.03½— .03¾
AMMONIUM chloride, granular (gray sal-amoniac)—lb.	.09 — .09¼	.09½— .10
BARIUM sulphate (precip.) (blanc fixe)—lb. ..	.04½— .05	.05½— .06
BLEACHING powder (see calc. hypochlorite	— —	— —
CALCIUM hypochlorite (bleach powder)—lb.	.02¾— .03	.03¼— .03½
CAUSTIC soda (see sodium hydoxide)..	— —	— —
CHLORINE, gas, liquid-cylinders (100 lb.)—lb. ..	.09— .09½	.10 — .10½
GLYCERINE, C. P. drums extra—lb.	— —	.20 — .21
LEAD nitrate—lb.	— —	.15 — .20
LITHARGE—lb...	0.8¾ .09	.09½— .10
METHANOL, 95 per cent—gal.	— —	1.60 — 1.65
POTASSIUM of chromate—lb.	.14 — .14½	.14½— .15
POTASSIUM hydroxide (caustic potash —lb...	.12 — .12½	.13 — .13½
POTASSIUM prussiate, yellow—lb...	.28 — .29	.30 — .32
SALAMMONIAC (see ammonium chloride)	— —	— —
SALT cake—ton..	—	32.00 —33.00
SODA ash, light—100 lb. ..	2.10 — 2.20	2.25 — 2.40
SODA ash, dense—100 lb...	2.20 — 2.30	2.40 — 2.60
SODIUM borate (borax)—lb.	.08¼— .08½	.08¾— .09
SODIUM carbonate (sal soda)—100 lb.	2.00 — 2.25	2.50 — 2.75
SODIUM hydroxide (caustic soda)—100 lbs.	3.85 — 3.90	3.95 — 4.25
SODIUM prussiate, yellow—lb	.16¼— .16½	.16¾— .17
SULPHUR,crude—ton..	16.00 —20.00	— —
SULPHUR dioxide, liquid, cylinders—lb.	.08 — .08¼	.08½— .09
ZINC oxide, XX—lb.	.08½— .09	.09½— .11

Beauty may be only skin deep, but it makes humanity stop and look. (Accent on "man".)

Recent Developments in Japan

The following is a special contribution to the Pulp and Paper Magazine and is inspired by frequent reports of wood pulp imports at the port of New York

According to advices coming from Japan, it appears that Japanese paper manufacturers are busying themselves in real earnest to develop and make accessible areas of wooded lands, hitherto untapped, from which they expect to procure a substantial part of their future pulpwood supply. Opinions of paper mill exterts, industrial leaders and others recently arrived in America from Japan bear out more or less the reports telling of such projected developments.

The paper industry of Japan, as is pretty well known, has been greatly taxed during the last two or three years meeting a tremendously increased demand for its product by foreign consumers, particularly in the Far East and in the Antipodes. Its export market has been extended so that Japan now supplies India, Australia, and New Zealand with millions of yen worth of Japanese paper and paper products annually, besides continuing as the chief exporter to China.

This enormously augmented export trade, not to mention the greatly increased domestic demand, has naturally called for immense supplies of paper-making materials. Now, Japan, of course, has not been able to produce even a small part of these raw materials, hence her paper manufacturers have had to obtain such supplies largely from foreign producers. But with the continually growing demand, leading Japanese paper makers have come to appreciate the sources, and while they have been giving every encouragement to the improvment of the manufacturing end of the industry, they are now turning also to the furtherance and promotion of projects which have to do with the reclaiming and tapping of pulpwood areas contiguous to, and within easy reach of the main Japanese islands.

The more important of these schemes center about the possible utilization of vast forest tracts in Manchuria and Saghalin Island. It is readily conceded that the proper development of these localities will call for the exertion of tremendous effort, particularly in Manchuria. And while the pulpwood yield from both sections is expected to keep Japanese mills supplied for years to come, speculation is even now being indulged in by paper men of Nippon concerning possible future developments in Siberia.

If Manchuria, Saghalin, Korea and other places in Japanese spheres of influence can really be made to yield a substantial part of the wood pulp needed by Japan's paper factories, it will follow that the pulp imports from other countries will fall off to a marked degree. But before this can happen, the Japanese will have to turn out a pulp which can compare favorably in quality with the pulp she now imports, notably the pulp from Canada. This latter is conceded by Japanese manufacturers themselves to have fibre qualities which they believe cannot be easily duplicated in any of their home made products. Most of the pulp now produced in Japan is very much like Scandinavian pulps.

Improvement in the manufacture of paper in Japan has been effected only in connection with the production of foreign papers, i.e.,—the paper made in Japan from foreign pulps. Speaking of the advance in this line, a recent report of the Japanese Department of Agriculture and Commerce says that machinery has been imported so that foreign paper is now produced on a large scale and is quite different from the production of the ordinary Japanese paper. Some of the kinds made are cardboard, printing paper, paper for match-boxes and renshi paper. The materials used are rags, wood fibre, rice-straw and other vegetable materials; of these, wood fibre, or pulp, is most extensively used.

The manufacture of paper known as Japanese paper, which since ages ago was carried on mainly as a secondary occupation by farmers, continues pretty much after the primitive fashion. It is still to a large extent the result of manual labor, though some few of the more enterprising paper makers have of late been applying labor-saving devices. The material for the manufacture of this paper is paper mulberry, called "mitsumata," and straw, called "hishihana." As ink smears on the Japanese papers, they cannot be utilized for printing, consquently the demand for them is very limited.

The quantity of Japanese paper produced is more than sufficient for consumption in Japan, and there is a tendency towards increase in its exportation. Foreign paper—especially printing paper—on the contrary, is not produced in sufficient quantity for home use. The year prior to the war 26,446,281 pounds were imported by the trade in Japan, which was about one-fifth of the total quantity she produced. During the war the imports fell off greatly, but in 1918 they had again mounted to two-thirds of the pre-war figure, and in the succeeding year the ante-bellum mark was just about equalled.

An idea of the Japanese paper industry's present extent may be formed by reference to the latest available figures compiled by an official industrial bureau in Tokio. According to these, the yearly production of the paper mills throughout Japan is roughly given as 168,700 tons, the value of which is 54,000,000 yen. Of this output, 80,000 tons are used for newspapers, 16,000 tons for the printing of magazines, 7,000 tons for the printing of primary school text books, 20,000 for the printing of middle school text books, 3,000 tons for the manufacture of blank-books, 15,000 tons are used by the Government Monopoly Bureau for cigarettes, 3,000 tons for postcards, 7,000 tons for match-paper, and 17,000 tons for wrapping and packing. The quantity required in the printing of newspapers and magazines takes 62 per cent. of the total production. Japan also uses much for the manufacture of paper boxes, cans and lacquered boxes and trays, which are exported by the millions of yen to America and Europe.

The last report of the Forestry Bureau of the Japanese Department of Agriculture and Commerce on pulp production in Japan shows a great increase in such production during the four years from 1915 to 1919. The total production in 1919 was 235,227 tons, an increase of 40 per cent. over 1915 and three times the total amount for 1911. Up to the year 1919, fifteen wood pulp manufacturing companies had been established, and twenty-nine plants were in operation in various parts of Japan. The quantity of wood used by these plants in 1919 amounted to 3,389,630 koku (one koku being 10 c. f.). The increase in production was accelerated largely by the expansion of Japan's paper manufacturing business. Saghalin and Hokkaido experienced the greatest growth in the pulp wood cutting industry.

Experts in the Forestry Bureau believe that Japan's future annual consumption of wood will go as high as 6,000,000 koku, or approximately three times the present figure. Production figures for 1919 show that Japan proper turned out 207,960 koku; Saghalin, 1,382,731 koku, while 1,746,902 koku was produced from wood cut in Hokkaido. The quantity produced in Saghalin that year jumped forty-one times over the total amount produced in 1913.

As it is definitely known that the suppy in Hokkaido is by no means inexhaustible, the various paper manufacturing companies are looking further afield for their future supply. The Oji Paper Manufacturing Company and some others are experiencing a shortage of material, and they have already undertaken the exploration of forests in Saghalin and Northern Korea with a view to surveying the possibilities of pulp manufacture there. Saghalin, it is expected, can be made to yield at least three times it present supply within the next few years.

Manchuria, because of her wealth in natural resources, is being made to figure quite extensively in the plans and projects having to do with the development of future sources of supply for the Japanese paper industry. Being bounteously endowed for forestry pursuits, especially in the untapped hinterlands, the vast area of Manchuria—and parts of Korea and Mongolia as well—afford a boundless field for large scale timber, pulp and woodland operations. While a good part of South Manchuria is level and destitute of trees—due principally to neglect by Chinese authorities in afforestation work—in the basin of the Yalu River the forest area is estimated at 715 square miles, and in its tributary, the Hun, no less than 480 square miles are covered by densely wooded regions. The trees in Manchuria are mostly pine and cypress—the pines being largely Korean pine which is a tree very similar to Oregon pine.

Nearly half of North Manchuria is wooded land, the forests along the Changpai and Hsingan Mountains being particuarly rich. Forests convenient to present transportation routes have been sadly depleted, but those in the remote regions are flourishing as ever.

Until now, the supply of timber, sawed lumber and pulpwood obtained from Manchuria has come mostly from the Antung district along the Yalu. Estimates furnished to the United States Consular agent in the Antung district, place the number of men engaged in the Yalu timber trade at 65,000, of which 60,000 are employed in cutting and rafting logs and 5,000 as teamsters. The teamsters and their teams are hired for the cutting season, while raftsmen are paid an average annual wage of $70, plus food and lodging.

The yearly output of lumber is dependent upon weather, a plentiful snowfall in winter facilitating the "snaking" of logs to creeks, while high water in spring and summer is necessary for rafting timber from the upper stretches of the Yalu and Hun Rivers to Antung. Early thawing of dragroads results in thousands of feet of timber being left in the cutting district. It was this which caused the Antung market shortage in 1919. The customs export statistics are not a true index of the Antung timber industry, as the only exports considered are those made in foreign-style vessels. An enormous export traffic in timber, shipped by native junks, comes under the cognizance of native customs, but does not furnish statistics.

While there were only two saw-mills in Antung in 1912, the number had increased to twenty in 1918. Several paper and pulp mills were erected during the same period (1912-18). One of the largest of these—the plant of the Yalu Paper Mill—was completed in recent months. This firm—a Japanese concern, capitalized at $2,500,000—is equipped with machinery capable of turning out annually 50,000 tons of paper pulp from Yalu timber.

The Yalu and Hun river regions, however, can supply timber and pulp wood cut for a time only, so Japanese pulp manufacturers and paper men have already surveyed the possibilities in the section of Manchuria lying to the south and east of the Kiren-Changchau railroad, and they have also looked over the region of the big watershed situated midway between this point and the Korea-Manchuria boundary. The vast forests covering the slopes of the Changpai-Hsingan mountains are in this great untapped territory. If this region can be made accessible a well-nigh inexhaustible supply of wood and timber will be opened up to industries depending upon such material.

Plans and projects for the opening of these resources have engaged the attention of Japanese industrial men for some time past. Paper, pulp and timber men are not the only interests concerned in the development of the resources of these localities. Much benefit is bound to accrue also to other enterprises, particularly to the cultivators of the soya bean, which, it is said, could be extensively grown in the section about Taou, which is situated some miles to the east of the South Manchuria Railway at a midway point on that line.

But plans such as these, before they can be undertaken at all, must be assured convenient transportation facilities. These are sadly lacking. However, Japan's industrial captains, those of them who can see large possible gains in the development of these hitherto untouched expanses, have for several years urged the extension and construction of the rail lines needed to make possible the exploitation of the unopened regions. The country is well within the sphere of Japanese influence, and the necessary routes might have been constructed before now had it not been for unsettled conditions due, first to the World War, and more lately to the instability of the Chinese Government, which government must, of course, be considered in any project involving Manchuria outside the peninsula over which Japan exercises direct control.

The present outlook, however, justifies Japanese paper men in their belief that something definite will be done in the near future to extend the rail lines. It is believed that appropriations for that purpose will be forthcoming whenever the present unsettled condition of international affairs may show signs of clearing. The South Manchuria Railway can be counted upon to co-operate in every way possible to help open these lines.

One of the most talked of projects is a connecting link between Kiren and the coast of North Korea. This extension may be undertaken by the Chinese General Railways, or it may be advanced by other interests, but whoever builds it, either now or within a year or two, will find that the Japanese engineers are prepared to be on hand to construct it in accordance with ready-made plans and specifications.

Some idea of the present situation in Manchuria, and the attitude of the Tokio Government toward the development of its resources, made be bad from a statement made last week in New York City by Viscount K. Inouye, who arrived March 4 from Japan to study American railways and "to invite Americans to co-operate in the development of the vast resources of Manchuria." Dr. Inouye, who is a member of the House of Peers in Japan, a director of the South Manchuria Railway, and a supervisor of the Fushun Colliery and Anshan Steel Works, denies emphatically that Japan is trying to monopolize the wealth of Manchuria. Manchuria's door is wide open, insists Dr. Inouye. There is no reason, he says, to exclude any nation, for it is the international field of commercial activity of the Far East, and offers equal opportunity to all. The co-operation of the United States is not only invited, but very much desired. Manchuria's development is still in its infancy, says Dr. Inouye. Since the surface of the country has not yet been scratched, and its vast resources are practically untouched, it would not be possible, he contends, for Japan alone to exploit this territory to its full extent.

While it has been shown in the course of this article that the production of wood pulp in Japan is bound to grow—even if the possibilities in Manchuria are not taken into consideration—the increased needs of Japanese manufacturers will not result in preventing a certain amount of ordinary Japanese pulp from being exported. Some such exportation will continue while it is so much more profitable for Japanese manufacturers to import special pulp from abroad. The amount of such exporting has averaged about 3,800 tons annually for a number of years.

During 1920, despite the growing demand in Japan, the pulp exports ran somewhat higher. This increase was due mainly to re-exports of foreign pulp. This pulp came from surplus stock—mostly Scandinavian pulp—which Japanese paper merchants had on their hands in warehouses. Because of the greatly increased demand for Japanese paper and paper products during the past year or two, importers of foreign pulp in Japan stored up a large supply of the raw material. Many of them found themselves stuck with this stock along about the middle of last year when Japan, like many other countries, experienced a period of depression in business, combined with a serious money stringency. And their troubles were further aggravated by a shortage in warehouse space which reached an acute stage in Japan last year. In consequence, the concerns which usually import pulp made every possible effort to dispose of what stores they had, and they hoped they might relieve somewhat the tight situation they were in by exporting whatever they could of their previously imported material.

Application for export permits were filed with the Tokio Government to an extent that naturally lent color to the belief that a large volume of actual exports would be undertaken. This, however, did not eventuate, considering that there was nothing in such trade for the exporting merchants except a chance to retrieve, in part only, the losses they faced through having the large stores of pulp on their hands. Another drawback to such exporting was the price factor—the drop in prices below the charge per ton to Japanese merchants when they originally bought the pulp. Present indications are that pulp exports from Japan are tending back to practically the same level as before the war.

PRIZES AWARDED FOR STUDENT ESSAYS.

The judges appointed by the late Chairman of the Technical Section, Mr. L. H. Shipman, to read the essays submitted by students placed last summer in the mills, were Messrs. R. A. McInnis, George Carruthers, and J. N. Stephenson. After considering the essays which were entered in the competititon arranged by the Technical Section, they have selected as first prize the essay submitted by Mr. A. B. Copping; second prize to that submitted by Mr. C. M. Croft; third pride the essay submitted by Mr. D. H. McFarlane.

The first two mentioned are student members of the Technical Section and all three essays are of a very high order.

A complete list with names is submitted herewith. The judges report that they were more than delighted at the obvious care which has been expended on the preparation of these essays.

The Executive of the Technical Section under the chairmanship of Mr. George Carruthers is again arranging this year to place students in the principal mills of the Association and is prepared to repeat their offer of last year of prizes for the best essay submitted for the competition.

Following are writers and titles of essays submitted by students for the Technical Section prizes:

J. O. Challenger: "Manufacture of Sulphite Pulp."
C. S. Jelly: "My Summer's Work in a Pulp and Paper Mill."
C. D. Goodwin: "The Manufacture of Kraft or Sulphate Paper."
H. F. Beaupré: "The Manufacture of Sulphite Pulp."
Ronald File: "My Summer's Work in a Paper Mill."
A. Johnson: "The Manufacture of Groundwood Pulp."
A. B. Copping: "Investigations of a Technical Service Department."
J. O'Halloran: "My Summer's work in a Pulp and Paper Mill."
E. Prevost: "A Study on Pile Driving."
C. M. Croft: "My Summer's Work in a Pulp and Paper Mill."
F. E. Shackell: "My Summer's Work in a Pulp and Paper Mill."
A. Brosseau: "The Story of a Sheet of Newsprint."
D. H. McFarlane:: "My Summer's Work in a Pulp and Paper Mill."
E. D. Hyndman: "The Manufacture of Sulphite Pulp."

BRITISH TRADE NEWS.

Office Boy to Director.

Mr. F. Brown, of Blackburn, was on January 26, appointed a director of the Sun Paper Mill, at Feniscowles. Mr. Brown, who has carried out the secretarial duties of the mill for many years, commenced work at the Sun over 30 years ago as an office boy. A native of Blackburn, he has received congratulations from his numerous friends in the pulp and paper industries over his well-earned promotion.

You may succeed when others do not believe in you, when everybody else denounces you, but never when you do not believe in yourself.

We wish to thank most heartily, those who have sent us their spare copies of the issue for January 20th. We are pleased to announce that the required number have now been received.

Sleeping Giant of Thunder Bay

By JOHN W. BRASSINGTON, Chief Engineer of Pulp
and Paper Machinery Department of Port
Arthur Shipbuilding Co., Limited,
Port Arthur, Ontario.

Now when the Pulp and Paper Industry of the great Northwest is following some fundamental law of progress and is pushing irresistibly towards this port of entry and distribution, it requires but a slight stretch of imagination to see the first signs of waking vigor in the Sleeping Giant.

He lies recumbent, his sphinx-like head looking ever upwards; the arms are folded on the massive chest, the long limbs outstretched in his age long slumber. He is fashioned of the primordial stuff that builds the eternal hills, and his latent power compels the vision of the newcomer to Port Arthur.

In the distant centre of a widespread water scene I have seen him flecked with the riotously rich colors of the sunrise, as their chromatic outposts scaled his purple sides, while the deep blues and bright greens of Thunder Bay reflected the mounting splendors of the coming day.

The Sleeping Giant.

I have seen his massive form more clearly accentuated by the snow that Nature dusted with lavish hand on this unique example of her wayward fancy; white corpuscles of promise that prophesy his awakening. Already in the past few years the red corpuscles of human faith and energy have builded the twin cities of Port Arthur and Fort William; a few years that are as the melting of a snow flake in the long period he has been dreaming there. Yet, short as these few years have been, they are surely the premonitory signs of the great awakening, the travail pains of some mighty birth of time of which he is the sign and token, that strong, silent sleeper of titanic form and massive strength.

Grain from a continent, vast stores of it from the wheat fields of Canada, flow to the grain elevators of the Twin Cities that have this somnolent guardian as their eternal symbol of colossal strength.

As an illustration of what is actually happening around Port Arthur and making it the distributing point for pulp and paper production of central Canada, the following pulp and paper mills have started in the Twin Cities within the last two years in order to avail themselves of the facilities offered by Port Arthur as a central distributing point for their product,

Provincial Paper Mills, Ltd., Port Arthur Branch, Port Arthur, Ont.

Kaministiquia Pulp & Paper Co., Ltd., Port Arthur, Ont.

Fort William Pulp & Paper Co., Ltd., Fort William, Ont.

Nipigon Fibre and Paper Mills, Ltd., Nipigon.

The tremendous demand made on Canada for wood pulp and "News" by the United States will undoubtedly in the near future be the incentive for further pulp and paper industries to start in this country, where the supply of pulpwood is very extensive and where facilities as a receiving point for the logs, and a distributing point for the finished pulp are offered by the great inland port of the North American continent.

This phase of development of Port Arthur as the great Canadian lake port is now only premonitory; it is, nevertheless, as great in its grip on the imagination as the magnificent figure of the Sleeping Giant lying outside the port itself.

We have named only four paper industries because they are the recent comers in our Twin Cities, but there are over thirty large paper industries, some of them amongst the largest in the world, in the Province of Ontario alone.

With a coming free egress to the sea, via the St. St. Lawrence River, the ever growing importance of Port Arthur as the great inland port of the new world fills the mind of the observer, as the giant effigy of the North American Indian sleeping out yonder so vivid and life-like, fills his vision.

RATIO OF PAPER STOCKS TO PRODUCTION.

Comparing the stocks on hand at the domestic mills on January 31, with their average daily production based upon the combined production for 1918, 1919, and 1920, the figures of the Federal Trade Commission show that:

Newsprint paper mill stocks equal 7 days' average output.

Book paper mill stocks equal 9 days' average output.

Paper Board mill stocks equal about 9 days' average output.

Wrapping paper mill stocks equal about 19 days' average output.

Bag paper mill stocks equal about 6 days' average output.

Fine paper mill stocks equal about 29 days' average output.

Tissue paper mill stocks equal 18 days' average output.

Hanging paper mill stocks equal slightly more than 16 days' average output.

Felts and building paper mill stocks equal 13 days' average output.

Miscellaneous paper mill stocks equal slightly more than 21 days' average output.

Total paper mill stocks of all grades equal about 12 days' average output.

While production decreased for all grades during January, some departments show an increase compared with those prior to the abnormal record for 1920 and the totals for January 1921, 1920, 1919 and 1918, were: 420,468; 650,293; 466,236; 491,010. Hanging suffered the least, newsprint next.

Transactions of the Technical Section

(A continuation of the Report of the Annual Meeting, Jan. 19 & 20, 1921.

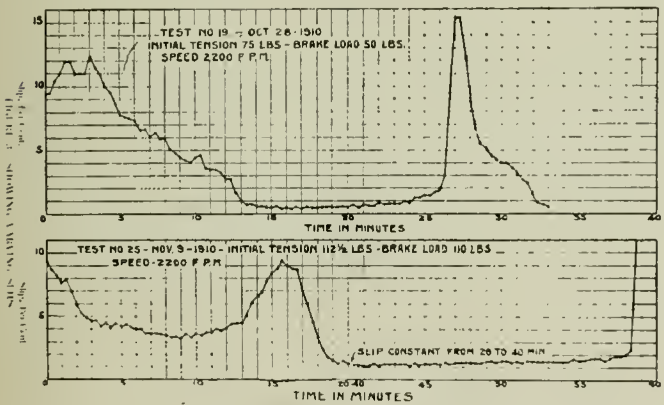
Speed Inter-lock as Applied to Paper Machine Drives.

At the conclusion of his paper, which appeared in the Pulp and Paper Magazine for Jan. 20, Mr. Warburton added:

I have come to the conclusion that in order to deal fully with the subject of sectionalized driving one would require to write—not a paper, but a book. There are many interesting phases of sectionalized driving which I have not even mentioned as yet which you may wish to consider and discuss, and if I have not taken up too much of your time already I would like to throw forward a few thoughts which may bring forth interesting discussion.

A well-known engineer (connected with a firm of machine builders) told me some little time ago that he did not consider a high speed news machine would be a paying proposition, because the horsepower taken for driving high-speed machines must be in proportion to the square of the speed.

Let me say at once—I am not contributing hereby to your fascinating subject—Speed vs. Width. The same remark would appear largely common to both types. Fundamentally, I suppose the man quoted is right because the wire is longer on high speed machines—more suction boxes—more presses—heavier presses, at least twice, and may be three times the weight of dryers, collectively these mean approximately double power demand per unit of speed as compared with an ordinary machine; nearly one thousand horse-power has been indicated in practice on mechanically driven machines running at nearly one thousand feet.



A graphic picture of belt slip.

The new mammonth Laurentide machine at six hundred feet takes 1.26 motor brake horse power per inch of width.

From data collected of single motor drive machines it would appear that the average horsepower of a news machine mechanically driven at six hundred feet per minute is about 1.97 brake horsepower per inch of width.

The mammoth machine **actually takes less power per inch of width than the average small machine.** Taking weight of machines into consideration, we find the average mechanically driven machine takes approximately three times as much power per inch of width as the Laurentide machine.

The power-cost bogey has had its sting withdrawn by a combination of good workmanship and design combined with sectionalized driving; these two factors are combined together, and cannot be separated, so, we cannot have the pleasure of knowing precisely how much to attribute to one and how much to the other. The results, however, are little short of staggering.

Another interesting feature which claims attention in connection with the starting up of a high speed news machine, is the enormous torque required to start the dryers turning. At Laurentide the torque required was equivalent to one thousand horsepower torque; the running load of the dryers at seven hundred feet as low as forty horsepower. That is to say, the starting load is no less than fourteen times as much as the estimated running load at one thousand feet. This starting torque worked out gives co-efficient of friction at start as that generally used for metal on metal dry, and there is evidently no oil at starting to help. All oil has been cleared away by a combination of pressure and temperature. A mixture of oil and graphite might help the starting conditions.

Smaller machines would appear from calculation not to have such fierce starting torque as compared with running torque.

Another interesting feature was when the dryers are turning round very slowly they have torque equivalent to five hundred and fifty horsepower, which appear to show that the oil does not get fully into the journals until the speed rises to some reasonable figure.

If I had been reading this paper in England instead of in Canada, I need hardly say one of my prime duties would have been to deal with steam engines first, but over here one is apt to take motors for granted. Here you are so spoiled by nature that you can, with reason, talk of electricity as a means of raising steam.

Friction clutches and all their attendant troubles are avoided by sectionalized driving. I wonder what form of friction clutch would have started the Laurentide dryers.

I think we shall be able to show that shut downs are less frequent—fire and life hazards are certainly less. Ease of control by push bottons to inch the dryers or the press rolls when washing felts are things that require to be experienced to be realized.

Those gentlemen who would have a basement, at any rate can have the basement for whatever purpose they like because it is free from any drive entanglements.

Vertical belts, we know, are bad. They are eliminated.

Cleanliness is at its maximum.

In the case of a jam at the calenders there is a button available to reverse the calenders instead of having to use violent mechanical instruments, e.g. pinchbars, to get the rolls turned round.

It is suggested that you may be able to use less sulphite and so save running costs thereby.

In conclusion I would just like to say that sectionalized drives are equally applicable, to book machines as to news, to tissue machines as to kraft, and that the demand for sectionalized drives did not arise from high speed news machines, because sectionalized drives were in demand years before high speed news machines were thought of, certainly before they were talked of.

MR. BRASSINGTON: I want to ask Mr. Warburton whether the electrical drive is sufficiently economical to consider replacing mechanical drives in existence. I have no doubt in my mind whatsoever that electrical drives with the Harland interlock system are efficient in every respect. I do not think the point is quite covered that a change in speed has to occur before the correction is made. The sectional drive permits a reversing arrangement and does away with the clutch and the tremendous torque upon it. I do not want to give the impression that I am going after the electrical drives in any sense, but on the old mechanical drives the amount of trouble was really not so very great, and your engines were really reducing valves. You got your power from your steam before you used it in the drying cylinders and it is possible that power is not the first consideration of the paper mill, because there are some things which are more important than the loss of any amount of power. For instance, you can lose a great deal of money if you allow the broke to pile up.

I would like to ask Mr. Warburton, "If you have a paper mill where you have already installed an ordinary engine drive, the amount of broke is comparatively small, and the mill is running in good shape, would it pay to pull it out and install the electrical drives?"

MR. WARBURTON: I don't know. It would depend on conditions.

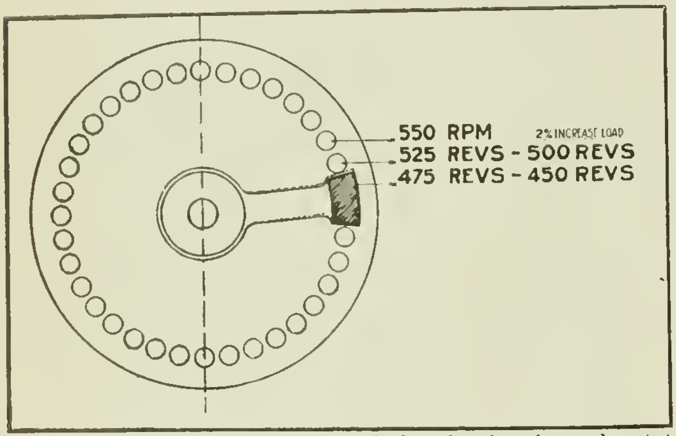


Diagram of controller contact circle, showing how rheostat arm "breathes" against the higher speed contact if there is a tendency for the motor to lag.

MR. BRASSINGTON: I would like to know whether you have any data or records showing the amount of saving that could be made in broke by putting in a sectionalized electrical drive, as compared with the old mechanical drive.

MR. WARBURTON: All I can say in connection with that is to refer to the figures on power consumption just given.

You may analyze a mechanically driven machine, calculate three per cent. loss in the belts, you may calculate bearing friction and make it three per cent. for each bearing, and you will get results very different from practice as shown by taking out the mechanical drives and putting in electrical drives. A great deal of power is consumed in a mechanical drive that is apart from any such figures arrived at, maybe the cone pulleys account for a lot of the difference.

Apart from paper machines altogether, my experience has been that in every case of electrification the saving by means of putting in motors and taking out all sorts of drives, is more than you can cal calculate theoretically.

Mr. WARBURTON said in reply to a question as to power delivered to the machine by a sectional drive and by mechanical transmission: On machines which I have analyzed giving an average of 1.97 B.H.P. per inch of width at 600 feet, some of the machines are in England, some of them in other countries. It is easy to get readings where electrical drives are in operation from paper machines analyzed to bring in those figures, that is the figure, 1.97 on the machines which were driven in an ordinary mechanical way with belts, gears, ropes and things, but in every case the machine was driven by one motor, and I have taken the brake horsepower of that particular motor, as compared with the collective brake horsepower of the Laurentide machine.

MR. MERRILL: (General Electric Company, Schenectady): It would be interesting to know the powers of these motors and the speeds, and also the number of sections to these machines.

MR. WARBURTON: There are nine sections and nine motors. Some run at 250 r.p.m. some at 500 r.p.m. The couch motor is 125 horsepower; each press, ninety horsepower; three sections of dryers, one hundred and twenty-five horsepower each; calender, one hundred and fifty horsepower.

MR. MERRILL: I wish to congratulate the Association on the paper Mr. Warburton has given us. Certainly, I think the arguments that he has set forth for sectionalized drives, particularly for new machines, is well worth the time and energy he has given to it.

MR. LEEPER: I would like to know about the gap arcing on the rheostat between the contact points on the rheostats.

MR. WARBURTON: As a matter of fact, we feared a little arcing in between the contacts and left about one-half the space of the contact itself, as gap. There is no arcing visible and in future installations the gap will be made less, as we do not fear sparking in any way.

MR. LEEPER: Personally, it looks similar to the regulator in use for many years. I feel that if you made speed changes on a section motor continually and rapidly you would have serious arcing at the contacts. It might not show up at once, but in time they would become so rough that you would not get any contact. I should think these would not last much more than a year of continuous service, and what I was after is how that arcing could be kept down.

MR. WARBURTON: We have not had a very long experience with the Laurentide machines, that is obvious. It is only a matter of weeks, but certainly there is no visible depreciation of contacts as yet. In the case of the other machine mentioned, which has been running for six years, we were called upon last year, for the first time, for contact renewals.

MR. LEEPER: The statement was made that for slow speed machines, gearing was preferable. According to quotations submitted on various sectional drives today with machines equipped with direct connected motors or with gear drives, there was a very little difference in the first cost. Now, why is the gear drive preferable if the cost is no different? It introduces another possible source of trouble in additional bearing requirements, and if the cost is the same, or practically the same, I cannot quite see the advantage of one over the other.

MR. WARBURTON: It is sometimes advantageous with a gear drive to change the gear ratio and so keep standard armatures for the different sections, but apart from this if the combined efficiency of gear and motor is not better than the slow speed motor there would appear to be no special benefit in using a gear drive as compared with direct connected motors. I have no personal preference at all.

MR. H. L. SANDMAN asked if the calender could be shut down and allow broke to be made between the dryers and the calender. He wanted to know if in shutting down the calenders the regulators would be out of circuit on the calender or on all the sections and would the rheostat continue to turn round on the section shut down.

MR. WARBURTON: At Laurentide a solenoid clutch was provided between the master shaft and the spur shaft in connection with the calender regulator and so arranged that directly the spur shaft driven by the motor shut down stops, the other spur shaft would be disengaged from the master shaft and so the regulator arm on the calender would remain stationary. As a matter of fact the Laurentide Company actually never installed this solenoid arrangement as they, along with us, considered the matter met completely by the construction. The brush arm is designed to run over the contacts. Actually I have had on test one arm which made 3,000 r. p. m. without damage.

MR. SANDMAN: Have you no fear that the friction action may spoil your tension? I mean the spring tension might become less in operation.

MR. WARBURTON: The mechanism is comparable to a direct current motor and its brush gear. Only, in this case, instead of the commutator revolving, the brush revolves, and the spring actuating on the brush is comparable to that on ordinary D C motor.

MR. WARBURTON said, in reply to MR. CUSHING's question as to the effect of temperature on control when starting from cold:

I think one of the main troubles of sectionalised drives in the past before the advent of any control was speed variation due to temperature conditions as much as to anything else.

With the motors controlled as described the motors will run in exact harmony with the master shaft regardless of any change of temperature conditions of rheostats or of motors themselves. The regulator in each case will automatically correct every variation in temperature of any part of the plant, and regardless of temperature variation will keep every motor in synchronism with the master shaft.

MR. H. S. TAYLOR: I would like to ask Mr. Warburton how the master shaft is driven? Is that driven by driving motors or from a separate motor?

MR. WARBURTON: Sometimes it is a matter of opinion, almost as much as anything else. Sometimes this shaft is driven by a dryer motor. Some people prefer the couch motor to drive that shaft, in other cases an independent master motor of two or three horse power may be used to drive it.

MR. TAYLOR: If the master shaft were stopped, would that shut down the machine?

MR. WARBURTON: No. The motors would continue running at a steady speed, approximately equal to the last controlled speed. The brushes on the regulator would revolve but electrically would be out of action, and so the regulator brush arm position would no longer have any effect on a motor.

THE CHAIRMAN: I see some representatives of the Laurentide here. They have the credit for the installation of the first news machine of Canadian manufacture. It is just possible they might wish to contribute something to this discussion.

MR. MASON: We would be glad to give any information a little later, when we have our second machine in operation, and we would be glad to welcome any of you to Grand Mere to see the machines. I would be glad to answer any questions.

MR. WARDLE: I might just add a word to what Mr. Mason has said, that we now have the opportunity of getting the long desired information as to what the different parts of a machine will require at various speeds and different loads, and will make the most of it, and we promise that the Technical Section will get the result of our experiments pretty soon.

MR. S. N. STAEGE: (Westinghouse Electric and Manufacturing Company): I think Mr. Warburton has contributed a great deal of useful information on the subject. The information with respect to belt slipping on cone pulleys is something which we all should consider. I question whether paper manufacturers in general, or even engineers, have fully appreciated the amount of trouble which results from belt slippage or that kind of pulley in the old mechanical system.

Well, as has already been pointed out, the trouble does not always show up at the place where it originates. The variations in speed between sections and between the couch and the first press, or between any of two presses or between the presses and the dryers may so weaken the sheet, that it may break between the dryers and the calenders or may break going over the printing press later on.

Now in regard to sectional drives which will produce a uniform speed, there is no more tendency for paper to break at a thousand feet than at five hundred. It is a question of how fast you can form a sheet, dry it, and tend to other things outside of the actual drive itself.

The question was raised a little while ago, as to whether it was advisable or permissable to take out the existing mechanical drive and instal a sectional drive. In our practice, we have found that the power is greatly reduced in the use of sectional drives, and I suppose, corresponds very favorably with the figures presented by Mr. Warburton, and I feel safe in saying that in paper machines we consider sectional individual motor drives as compared to the mechanical system of drives, particularly the Marshall train drives—will effect a saving of at least twenty-five per cent, and it may go as high as fifty per cent, depending on the conditions and the type of drives.

Now, power, of course, is an item, and it has been mentioned that the engine is usually operated as a reducing valve; the exhaust steam being used for drying paper. However, if electric power is used for paper machines, and normally you would use five hundred horsepower on the machine, and you now find you can drive the machine with two hundred and fifty horsepower, you can still develop five hundred horsepower, use the exhaust steam for drying, you need that much, and use the balance of power for driving beaters or anything else throughout the mill. So, if you do not require the full amount of power on the paper machines, it can be used elsewhere.

Whereas there is a large saving in the mill on the power required to drive a paper machine, where sectional drive is used, I believe that the biggest saving resulting to the paper mill is the reduction of lost production. I believe that will run into more money than cutting in two the power which drives the paper machines, because we know that production runs into money pretty fast and if you are making two per cent of broke and you can cut that in half—although you cannot eliminate that entirely—your pay roll is no greater and the investment charges on your plant are no greater, and the only increase you are putting into the increase of production is the raw materials, and what you get over and above the cost of that raw material for that greater out-put is "velvet". For instance, if you can increase your production one per cent, it will pay the fixed charges on a pretty big investment under sectionalized drives.

Just speaking in round figures, suppose you would throw out your mechanical drive, and put in a sectional drive, regardless of the size of the machine. Suppose that new model would cost a hundred thousand dollars. — remember I am just giving you rough figures—supposing you say that the interest and depreciation charges against that should be ten per cent, or ten thousand dollars a year, amounting to three hundred to four hundred dollars a day, how much increase in production would you have to make to discount that and put something on the profit side? This is quite typical.

Slow speed machines, like cylinder board machines, operate from perhaps a few feet per minute up to two hundred feet, with the motor speed regulated to an intake shaft from a few revolutions up to five or ten or fifteen revolutions. I believe that the slow speed motor would cost more money than the high speed motor with the reduction gear, and, further than that where a high-speed motor is used with reduction gear ventilation problems do not occur, whereas if you use a motor at this extremely low speed, it would be absolutely essential to use a forced ventilation system. Outside of the fact of these differences involved, there is a difference in efficiency, but, there is no reason why a slow speed motor cannot be applied to slow-speed machinery. However, I believe that the efficiency of the slow-speed motor will be less than the high-speed motor plus gears. Not only that, but the slow-speed motor will be heavier to handle, and occupy more space, which are obvious disadvantages.

These are a few of the points which, in my opinion, seem to favor the high-speed motor with the gear reduction as against the slow-speed motor.

Certainly a sectionalized motor drive for paper machines can be made more flexible than the mechanical drives. You can start and stop it as rapidly as you please, jog along and move it an inch or two at a time, and you know the enormous strains encountered and the time lost in striking in the clutches, and the wear and tear is extreme. I know that in some of the high speed machines, with mechanical drives a special reducing gear is required to start the dryers, because it is impossible to start them otherwise; the clutch would not hold, and you have to start with a low gear, and later on shift into a higher gear, after they are in motion.

I think the question of very high starting torque is one that requires a good deal of attention, and that by carefully getting after the mechanical designs when the conditions are known, this can be greatly reduced in a news machine just starting up but perhaps the opportunity has not been afforded for thoroughly analyzing the mechanical conditions.

There is no question but what the basement can be eliminated so far as the drive is concerned, because no part of it goes into the basement and considerable difference can be made in the width of the paper machine room alone. We have found, in analyzing several cases, that from ten to fifteen or twenty feet narrower machine rooms could be effected by using sectional drives than is absolutely necessary with the mechanical system of drives, and the reliability, in my opinion, is far greater as regards the control of the motors, and they can be operated for years with practically no maintenance other than renewals of brushes, which is only a matter of a few cents or dollars, and can be relied upon to operate every minute of the twenty-four hours six or seven days a week, year after year, whereas, with the mechanical system of drive, nearly every mill has a basement full of extra gears, clutches, pulleys, belts and so on, and one man is constantly working repairing the parts and making renewals. There are so many of these advantages in sectional drives, which Mr. Warburton has touched upon and analyzed more or less particularly, and which can be explained individually, that I believe every one of us can well afford to investigate further.

MR. STEPHENSON: At this time I think we are particularly fortunate in having this paper presented to the Technical Section, for two reasons: one is, that we have had a description of the operation of the first sectionalized driving that has been introduced in Canada, and this has been attached, as Mr. Carruthers has said, to the first news machine built in Canada. The beginning of the operation of this machine, and the recent beginning of the operation of a machine on fine papers, represents the entry of Canadian manufacturers into a field of endeavor which holds great promise for Canada as a manufacturing country, and Canadians, I think, have reason to be proud of the manner in which we have found that these machines are behaving. It means a period of development in machine construction in Canada that some of our concerns have been aiming at for some time and with the absolutely certain growth that must come in the pulp and paper industry in Canada, the corresponding or complementary development of the construction of machinery for our industry, is something which is certainly to be desired, and something of which we have every reason to be proud. We have concerns in Canada now that can manufacture practically—if not entirely—everything that the pulp and paper mills reqire in the way of machinery, and we have the mother country—in this instance, at any rate—supplying the motive power that is driving the finest piece of workmanship in the paper machines that we have, and it is a great pleasure to me to move a vote of thanks to Mr. Warburton, for the excellent way in which he has brought this matter to our attention.

MR. ROSSITER seconded the motion, which was carried unanimously.

(The discussions of papers will be continued.)

GERMANY'S PAPER TRADE.

I have just had a look at the "Bulletin" of the Federation of British Industries, which includes nearly all the paper mill owners of reputs, and other industries, and in commenting on the German paper trade it is stated that it is very satisfactory. Selling prices are so high that producers of paper are enabled to use American coal, which has been impossible for other industries in view of the exchange position of the dollar. Then again the home demand for paper can be supplied and efforts are now being made to obtain permission to export 500 tons a month. Such exportation would naturally yield very high profits owing to the prices prevailing outside Germany, the low cost of production and the low level of the mark. From this account the Germans are getting over the coal question. It will be recollected that under the peace terms France was to get a big share of coal each month to make up for what had been destroyed during the war.—J.R.B.

British Trade News

(From our London Correspondent)

London, Feb., 21, 1921.

The Paper Makers' Association of Great Britain and Ireland has made a change in the date on which the annual dinner will be held. It is put back to April 15 and will conclude an interesting week's meetings and conferences, most of which will be of a private character. Unfortunately the President (Mr. W. L. Tod) is at present unwell and has had to cancel some of his engagements.

Technical Section.

The various branches of the Technical Section of the Paper Makers' Association are progressing very favorably, and from a technological point are instructive and interesting. What is more pleasing is the fact that mill men are giving much attention to the Section and now that they have got a "move" on big things are expected in the future. Last week the London branch held their first meeting and it was a success under the chairmanship of Mr. H. Goldstraw, of the firm of John Dickinson & Co., Croxley Paper Mill. One of the members, Mr. F. Heckford, dealt with several subjects on the chemical side of papermaking in a general way and in the discussion that followed. Mr. R. W. Sindall took part. One of the Scottish branches has become so interested in the technical work that a local University has been approached with a view to providing classes for students in papermaking and if Manchester can do it there is no reason why Scotland should be in the backward area.

Pulp Prices Easier.

Sellers of pulps are trying to encourage buyers with easier prices. In other words they want to liven up a dead market. Beyond small dealings, very little business is being transacted in other sulphite, sulphate, or groundwood, and, consequently, pulp men are anxious to meet the paper makers as best they can in quotations and revising standing contracts. Quotations are now about as follows c. i. f. to United Kingdom ports:

Bleached sulphite, £50 — £52; Easy Bleaching, 37.5 —38; Sulphite news, 32.5 — 34; Unbleached soda, 32.5 —34; Soda kraft, 29.15 — 30; Groundwood 50 per cent wet., 10; Groundwood dry, 20.

News has reached London that the workers in some of the Swedish pulp mills are on strike over the question of wages and output is being hampered. In Norway there is also considerable unrest, but the mill workers are looking on the depression existing from a sensible point of view. Taken all round the Scandinavian pulp market is very quiet and enquiries on a small scale.

Recently small shipments of unbleached sulphite have reached England from Canada. Germany is now sending dry groundwood into the British market at a little over £20 a ton.

The Paper Situation.

There is no improvement to report in the market. Depression still rules, printers are "slack", and paper sellers are down now on rock-bottom prices. Many mills still remain closed, unemployment is still great, and looking round at things generally. I am afraid the British mill man is as far off a revival today, as he was in October last, when the depression set in upon him with a vengeance. With this gloominess overhanging a great industry one cannot expect pulp sellers to look cheerful, no matter what inducements they may hold out to buyers. But still the fact remains that the paper mills of the United Kingdom are undergoing a severe strain and all sorts of devices are being used to compel them to sell under the cost of production. Some of the big newspapers, not pleased with the cost of newsprint, act like fools in their paradise. They keep shouting into the ears of the paper mill man that Germany and Scandinavia are dumping cheap shipments into market and that prices of British paper must come down to the same level. It is true some cheap lots did find their way into London and capital was made out of them; but all the agitation conjured up by the big buyers did not force down prices to the level they expected and now they are resorting to the same methods again during the period of depression. British papermakers, however, are firm and, perhaps, know more about what is coming into the market than buyers do.

The Spirit of Co-operation.

Naturally in these days of dire distress, depression, and uneasiness, one may ask what is being done to bring things to a normal state. Well, there is a spirit of co-operation prevailing. Pulp men are trying to meet the paper mill men in every way possible and the paper mill men are trying to meet the wishes of their customers. There is a give and take policy prevailing, otherwise there would be serious financial losses in many quarters. For instance, some big buyers of paper have been so hard pressed that they have actually asked the mill to cancel their contracts. Recognising the serious state of affairs the mills have acquiesced and a good customer helped out of a dilemma. Pulp men do their share also, and so does the worker. And the relationship between worker and employer today is quite in keeping with the prestige of the British mills, notwithstanding the serious unemployment problem, because, the employee realises that in a period of depression, or slump, it is useless to try and draw blood out of stone through the channels of trade unionism, which is undergoing a severe financial strain as well as the pulp and paper industry. Consequently, in this period of uncertainty there is a spirit of friendship and sympathy, one with another,—a spirit of cooperation in order to stabilise the industry and bring about a revival of trade.

Irish Paper Mills Co. Ltd.

The Irish Paper Mills Co., Ltd., of Clondalkin, Co. Dublin, in which Mr. F. E. R. Becker takes an interest, appealed a few days ago for support in offering £150,000 8 p.c. 1st mortgage debentures at 98, redeemable at 105 p.c. over 15 years. For over 100 years this mill has entered for the Irish and English trade and since it passed int othe hands of the present owners £180,000 has been spent from 1914 up to the present, in bringing it up-to-date.

Notelets.

Kraft paper is selling at £43 a ton—when an order is obtained.

Scotish mills have big stocks of exparts. Nearly all the exports in Algeria has been purchased for the United Kingdom.

While working on a chimney stack at the Godalming Paper mill, a steeple jack was gassed. His mate lashed a rope round him and lowered him to the ground, by means of a pulley, for medical treatment—an act which made those who saw it feel dizzy.

The Manchester School of Technology has demonstrated a process, known as the Robey-Taylor system, for treating papermaking fibres. It is claimed to give an improved yield and a greater product. Geo. Taylor, of Dallas, Texas, U.S.A. carried out trials with cotton linter, hemp, jute, and the paper samples were looked upon as creditable.

A catalogue of the catalogues published in Canada is now open for inspection at the British Overseas Trade Department. Canadians need not worry about it.

Shipments of pulp to the United Knigdom during February are on a small scale.

It is satisfactory to note the name of long established pulp agents appearing in the official register of imports from Canada — thus bearing out the old war saying "Trade Within The Empire."

Electrolytic Bleach in India

Mr. R. Sitarama Rao, of Bangalore, India, came to the University of Maine for special courses in Pulp and Paper Technology. He was asked for an opinion on the possibilities in India for making electrolytic bleach in connection with the manufacture of paper, textiles, etc. His interesting reply is as follows:

To answer definitely your question whether India can make her own electrolytic bleach is not quite possible. I did not make a critical study of Indian Geology from an economical and industrial standpoint, since it formed a part of the course in general geology. The vast size of the country — a country as large as the continent of Europe excluding Russia — makes it difficult for one who has not made a special study of the subject in question to speak or write authoritatively on it for the whole of India. However, I will give a more general information about those parts of India with which I am least familiar and a more definite information about those with which I am most familiar.

Many of the present industrial plants are more or less situated near or in large cities. In many of these places electricity is generated either by water power or by steam for mills and for running street cars. I know that electricity is generated by means of water power in Kashmir, a Native State, close to the Himalayas in the North-West, and famous for some very fine fancy goods in papier-mache. I do not definitely know whether lime could be had in large quantities there. In and round about Calcutta there are large factories. I do not know how they get their electricity. In the State of Mysore, the river Cauvery has been harnessed at Sivanasamudram and the electricity generated is used for street and home lighting, for mining, and for running some spinning and weaving mills. A couple of artificial lakes have been constructed by putting dams right across the rivers Vedavati and Cauvery, and the water from them can be used for generating electricity. The Government is thinking of making good use of the water-fall at Gerusoppa, a fall of about 990 feet. In the same State of Mysore, which is about 700 miles to the south of Bombay, there are a few other places where electric power could be generated. In Travencore, another Native State, forming the southernmost eastern corner of India, there was some years ago a paper mill. A conversation with one of the paper mill proprietors in Bombay made me believe that there were some facilities for water power in that State.

In Bombay generators are driven by steam turbines and the power is used for running street cars. Each mill generates its own electricity by steam or oil engines. Lately a gigantic scheme known as Tata's Hydro-electric scheme was started to supply electricity to Bombay and its suburbs. The scheme briefly stated is as follows:

Three artificial reservoirs or lakes, one below the other and each connected with the succeeding one by means of a channel, were to be constructed. The last artificial lake was to be connected to a small reservoir by an aqueduct running through a number of short tunnels. From the small reservoir which could be drained dry at pleasure should be run three penstocks about 6 ft. 6 inches in diameter almost to the foot of the hill and each of them were then to be divided into five or six branches. Each branch was to drive an undershot Pelton wheel directly coupled to a generator. The head water is more than 1,650 feet high from the wheels. More than half of the work had been finished when I left India. When that is completed, there would be a very large amount of electricity available for many industrial enterprises in and round about Bombay. The Power House is near Karjat, about 50 miles from Bombay. It may not be out of place here to mention that the reservoirs have not any perennial rivers as feeders and for the supply of water they depend upon rainfall. The rainy season lasts for about three months in the year.

With regard to the supply of lime, I think, there will not be much difficulty in many parts of India. That part of the Western Ghats, where the Hydro-electric Scheme is situated, are of basaltic formation with plenty of fine calcite crystals and any amount of limestone can be had there and near Bombay.

There are extensive beds of rock-salt in the N. W. parts of India and salts are manufactured to a small extent in the interior from certain kinds of earth. By far the largest supply comes from sea-water. The manufacture of salt is a Government of India monopoly, and if the Government means to help the industry large quantities of it can be had.

In conclusion I might say that there might be many places such as Kashmir, Calcutta, Travencore, etc., suitable for making electrolytic bleach; the State of Mysore has every possibility for making electrolytic bleach if industries are started; and Bombay has every facility for making the same already or in the near future.

The above is only general information. Since we are interested in paper industry in particular some attention to it is not out of place. There are about seven or eight paper and pulp mills in India, scattered about in the country. The larger mills are in the north. Two mills are near Calcutta, and a third about 120 miles from Calcutta. One paper mill is in Lucknow. All the above mills use mostly Sabai grass, rags, jute, etc. The rest of them are small ones. They are at Baroda, Bombay, Poona, etc.

The paper mills near Calcutta are under foreign management and are probably well situated for making their own electrolytic bleach. The mills in Bombay can make their own bleach as the can receive their supply of electricity from Tata's Hydro-electric Scheme. The paper mill at Poona has every chance for making it in the near future. If a pulp and paper mill is started in the State of Mysore, they will try to make their own bleach.

CHEMISTRY OF PULP AND PAPER MAKING. By Edwin Sutermeister, 479 pages, 55 figures and 31 full page photomicrographs. John Wiley & Sons, Inc., New York, 1920. Price, Cloth $6.00 (U. S. funds). Obtainable in Canada from Renouf Publishing Co., Montreal.

The increasing importance of technical control in the pulp and paper making industry has created a demand for more extensive literature dealing with the subject. Indeed, the existence of a comprehensive and constantly increasing literature is the mark by which an industry may be known to have passed the stage of trade-secret, rule-of-thumb methods and to have reached the point where science has taken hold and the knowledge of all is at the service of any. Judging by this alone, it is evident that the past ten years have witnessed the transition in the paper industry in America.

But although the technical literature appearing in this last decade has reached satisfactory proportions it has almost without exception, taken the form of short articles or booklets dealing with particular phases of the industry. For a connected treatise we had still to look to European writers who, of course, dealt with the industry as carried on in Europe. The one textbook of purely American origin really appeared before its time and was out of print when the increasing demand began to make itself felt.

But the last few months have altered this condition of affairs. First, we have Witham's book with its excellent data on the mechanical side of pulp and paper making and now appears the ideal complement to it, Sutermeister's "CHEMISTRY of PULP and PAPER MAKING", published by Wiley, and it covers about as well as could be expected of a single book all that its title indicates.

It is not to be expected that such a work should be up to the minute and furnish the late news in the technical world as is done by the journals but this one comes very close to it. The chapter on "Cellulose", for instance, embodies all the late work of importance on cellulose determination except that of Dore whose publications appeared about the time this book must have been in process of typesetting. As a second edition will doubtless be a necessity very shortly, it is possible that the author may even include this in it. Whether he does or not, he has provided in this chapter a very clear and concise account of the main reactions of cellulose and for those who would go into greater details he has furnished a copious but well selected list of references. The many reference notes throughout the book are, indeed, not its least valuable feature

The chapter on fibrous raw materials is extensive and excellently illustrated by photomicrographs prepared by the Bureau of Standards. This chapter, in addition to giving chemical data on the different materials, also contains a number of tables of other data, valuable for chemical engineering work, such as the weight per cubic foot of the materials, the bulk under different conditions, the solid wood per cord, etc.

The processes of pulp and paper production are well treated from the chemical point of view and methods of control and test are given fully. The author has evidently been at pains to prevent his personal opinions having any undue influence. Where dealing with debatable points, he presents the argument on both sides with great fairness.

Mr. Sutermeister's long experience gives practically all of this work the authoritative force of intimate knowledge. His manner of expression makes the book easy reading for anyone interested in the chemistry of this industry. Extraneous matter has been skillfully omitted. The quality of paper and the workmanship of the book could hardly be better.

The chapter headings are:—Cellulose; Fibrous Raw Materials; Rags, Esparto, Straw, Bamboo; The Soda Process; The Sulphate Process; The Sulphite Process; Ground Wood or Mechanical Pulp; Bleaching; Sizing; Loading and Filling Materials; Coloring; Coated Papers; Water; Testing Wood Pulps; Paper Testing; Printing; Appendix.

Any book is open to some criticism; the most serious in this case is the entire omission of any reference to the chemical reactions of cellulose in the beater. Some minor points such as assuming a knowledge by the reader of Millon's reagent might be found by a careful examination but on the whole the book is exceedingly well prepared by both author and publisher. It is well worth an important place on the "handy shelf" of every pulp and paper mill laboratory.—W. B. Campbell.

DON'T OIL HANGER BEARINGS LIKE MACHINE

Lubrication like belting is a subject that is very much misunderstood. Just as mechanical men in mills and factories have looked upon belting in the past as just belting, they have looked upon lubricant as just lubricant, failing to recognize that there is a science in the application thereof.

Of course, there have been exceptions to the above, but generally speaking, neither belting nor lubricant has received proper consideration. Nor can it be said that there is a universal awakening to the importance of these things now. Belting and lubricant are receiving more attention than they formerly received, but the field for missionary work is broad, and as in religion, it will always need to be carried on to win new converts and prevent backsliding.

One step toward better lubrication is the classification of the bearings on all machinery in the plant, thus:

(1) High-speed high pressure bearings. (2) medium-speed medium pressure bearings, (3) high speed low pressure bearings. (4) special bearings. A special lubricating oil will be needed for each one of these classes. In the average shop the same oil that is employed to lubricate a large boring mill is also used to lubricate a sensitive bench drill. In other words, there is a universal application of one single grade of oil throughout the shop. Nothing could be more impractical or unscientific than this. A lubricating oil with sufficient viscosity for use on a huge boring mill could by no means be successfully employed on a piece of small machinery, with its moving parts revolving at high speed.

The same oil that is used on the bearing of a 9-in. lathe should not be used to lubricate the bearings in the shaft hangers. When a lubricating oil is too viscid it actually retards (because of its high internal friction) the motion although it lubricates the moving parts. On the other hand, an oil that does not possess sufficient viscosity (usually termed a "thin" oil) is unable to withstand high pressure, and poor lubrication will result owing to the fact that the oil will be squeezed out of the bearings. These few facts will illustrate the impossibility of using one oil throughout the entire shop without a serious loss of power and general efficiency of the machine.—The Amphibian.

PULP AND PAPER NEWS

Public School Inspector Wilson at Haileybury, told a gathering of high school pupils that the pulpwood cut of Northern Ontario last year would, if gathered together, stretch out in a line four feet high from Iroquois Falls to Toronto. The distance between the points mentioned is approximately 460 miles.

Amalgamation of the Canadian interests of Sinclair & Allen, publishers of Toronto, and Eaton, Crane & Pike Co. of Pittsfield, Mass., is announced by officials of the two concerns. A. Sinclair will be the president of the new company, which will enter into the manufacture of the Eaton, Crane & Pike Co. line of fine stationery. Col. W. H. Eaton, treasurer of the Eaton, Crane & Pike Co., will be vice-president.

Mr. Justice Middleton, at Osgoode Hall, Toronto, refused to dismiss the action taken by the Spanish River Pulp Mills Limited, for an injunction restraining the Riddell-Latchford Timber Commission from enquiring into matters which the company claims to be beyond the scope of the enquiry. Chief Justice Sir William Mulock recently refused to grant an interim injunction upon the application of the company because the Timber Commissioners had not had notice of the application. However the commissioners refused to proceed farther with the probe until their status was established.

Mr. Harry L. Muir, the hustling sales representative of the Don Valley Paper Mills, Limited, Toronto, has returned from a business trip through the Maritime Provinces to Halifax. Although the same business conditions exist throughout the east, as in Ontario, Mr. Muir says a spirit of optimism is quite apparent in the paper trade and eastern dealers and manufacturers are confident of a return to normal conditions during the summer months.

At the annual meeting of the Lincoln Paper Mills Company, Limited, St. Catharines, held last week the following officers were elected: president, Mr. A. S. directors, Mr. H. K. Woodruff, Mrs. W. D. Woodruff Woodruff: vice-president, Mr. T. A. Woodruff and Mr. H. H. Collier.

Dwight P. Robinson & Company, Incorporated, a large firm of engineers and constructors of New York, has recently opened branch offices in Montreal in the Dominion Express Building. Alexander C. Barker, Vice-President, is in charge of the office. The company is a consolidation of Westinghouse, Church, Kerr & Co., Inc., and Dwight P. Robinson & Co., Inc., and has done extensive construction and engineering work in Canada for the Canadian Pacific Railway, Canadian Salt Company, Canadian Crocker-Wheeler Co., Dominion Government, Aetna Explosives Company, Grand Trunk Railway and others.

Although at the present time the output of blotting paper at the Howard Smith Paper Mill at Cornwall is not large, the company expects that before the end of the present year it will be possible to devote one machine entirely to the manufacture of blotting. This branch of paper making marks an innovation in the paper manufacturing industry of Canada, the Howard Smith Company being the first concern in the Dominion to undertake the manufacture of blotting paper. Prospects are favorable for the new Canadian undertaking inasmuch as the raw material largely originates in Canada and the product being turned out at the Cornwall mill is of highly satisfactory quality.

The profits of the American Sales Book Company for the past year show an increase of $175,000 compared with the preceding year and an increase of $285,000 against the figures of 1918, according to reports submitted at the annual meeting in Toronto In addressing the shareholders, President S. J. Moore, pointed out that the company's business has never shrunk more than twenty per cent, under the most unfavorable circumstances. He stated that shipments during January and February exceeded all previous records. The former board of directors were re-elected.

The action by the Attorney-General of Ontario against J. R. Booth, of Ottawa, will be tried at Ottawa, according to an order made by J. A. C. Cameon, Master in Chambers at Osgoode Hall Toronto. H. S. White appeared for the Attorney-General on the motion to change the venue from Pembroke. F. S. Mearns appeared for the defendant. The Attorney-General alleges that the Booth employes cut timber estimated at two million feet, board measure, on the Bonchere river limits of the Golden Lake Lumber Co. Damages to the extent of $40,000 are sought. The defence is that the rights to cut timber were regularly acquired, and that in any event the action is barred by the statute of limitations. The cutting is alleged to have taken place in the years between 1911 and 1915.

Death removed an old and esteemed resident of Toronto last week in the person of Mr. William Clarke, who died at the residence of his brother in New York. In the early days he was a builder and contractor in Toronto and later he was partner, with three of his brothers, in the Gulf Pulp & Paper Company, which some time ago was disposed of to the Northcliffe interests. The Clarke Brothers were the founders of the business, which is situated in Quebec Province, and they established what is now Clarke City, in the Gulf of St. Lawrence, near Seven Islands, where a large pulp mill was erected and operated. The brothers also acquired extensive limits in the province and built up a large business, until now Clark City has a population of about ten thousand The late Mr. Clarke had reached the advanced age of 71 years and is survived by his wife, four sons and one daughter.

Belgo Canadian Company anticipates a slight slackening of demand for newsprint and a consequent curtailment of operations to some extent.

The Royal Securities Corp. are placing on the market $2,000,000 of 8 per cent bonds for Fraser Companies, Ltd. The price is 99 and accrued interest, to yield 8.10 per cent.

Mr. John Hewitt, of the Paper Sales Company, Yonge Street, Toronto, who has been in poor health for some time left this week for Virginia where he will spend some time in a much needed rest.

The Soo Mill of the Spanish River Company boasts a team of girl hockey players. From the scores reported in the Spanish River News they have something to boast of.

MAKE THEIR OWN LIME.

The Pacific Mills Company at Ocean Falls, B. C., now have their own lime kilns. They have a capacity of twenty-five tons daily. The limestone is quarried at a point one hundred miles distant, and transported to the kilns by scows. The mill makes both sulphite and sulphate pulp.

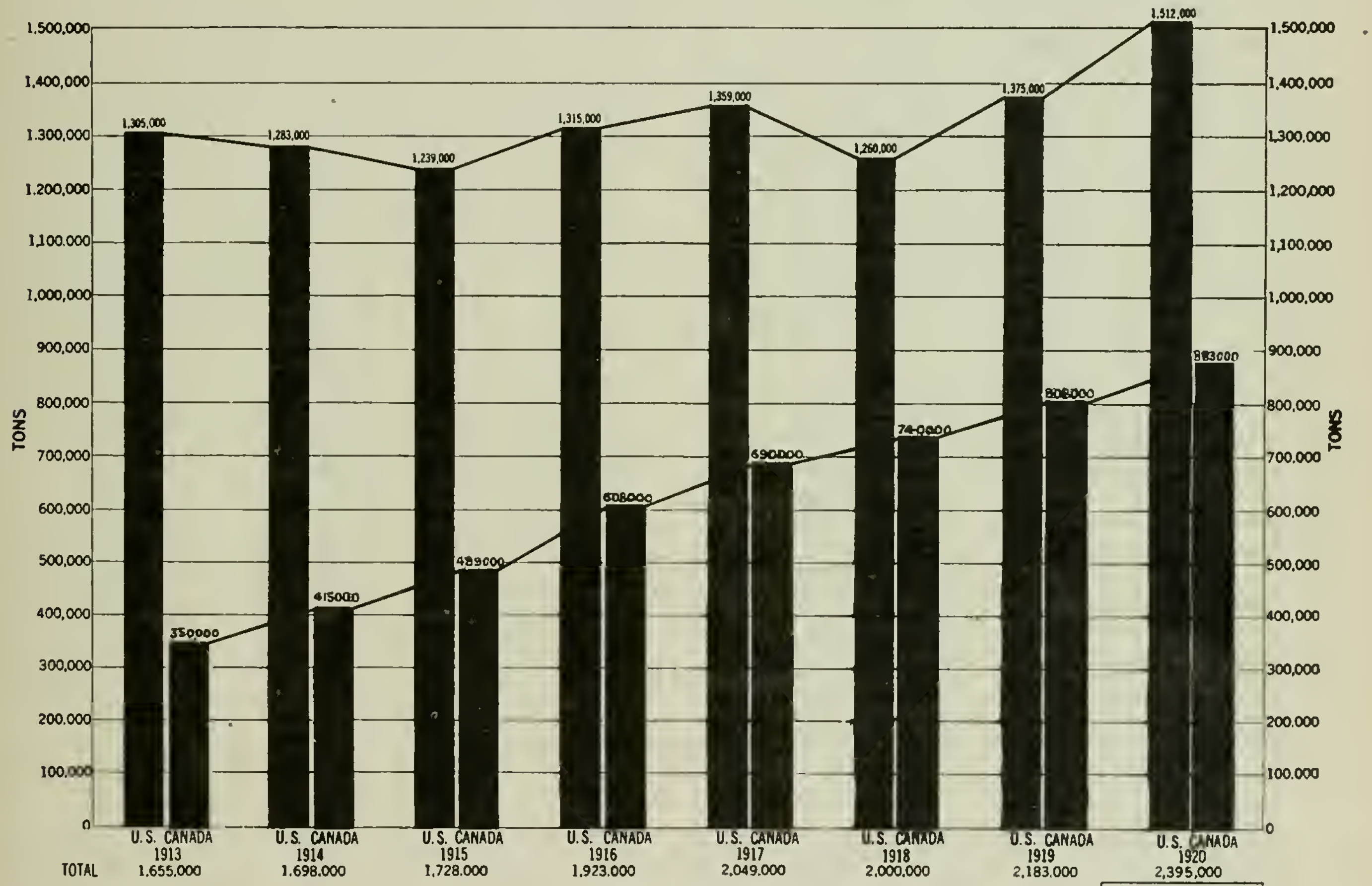
FIRE IN WASTE PAPER.

Several hundred tons of waste paper were destroyed by a fire which partially destroyed a warehouse at 342 Des Carrieres street, Montreal, last Saturday afternoon. The building, which is owned by A. Wiker, paper dealer, is a large wooden construction, and soon after the discovery of the fire was a mass of flames. Control of the fire was obtained in less than 25 minutes, but men had to be left working until yesterday morning to prevent any outbreak in the tightly pressed bales.

"In old Babylonia," we are told, "they didn't print their literature, they baked it." Over here and nowadays, as a rule, we roast it.—"Nashville Banner."

The general situation seems to be pretty well summed up in the confession of an Atchison negro: I sleeps well, and I eats well, but somehow I has no desiah to work."—"Kansas City Star."

NEWS PRINT PRODUCTION, 1913-1920 UNITED STATES AND CANADA



NEWSPRINT SERVICE BUREAU
R S KELLOGG, Secretary
18 EAST 41ST. ST. NEW YORK
January 28 1921

Production.		Average Yearly Increase.	
Year.	Tons.	Tons.	Percent.
1904	913,000		
		80,260	8
1909	1,326,000		
		82,250	6
1913	1,655,000		
		43,000	3
1914	1,698,000		
		30,000	2
1915	1,728,000		
		195,000	11
1916	1,923,000		
		125,000	7
1917	2,049,000		
		*49,000	*2
1918	2,000,000		
		183,000	9
1919	2,183,000		
		212,000	10
1920	2,395,000		
16 Year Average		92,600	6

(*) Decrease.

Technical Section

CANADIAN PATENTS FOR PULP AND PAPER MAKING.

C-6. Saw filing device. Can patent No. 204,306, WM. H. KRAMER, Newcastle, Indiana, U.S.A., Sept. 28, 1920. Claims allowed 5. —A.P.-C.

C-6. Saw filing clamp. Can. patent No. 204,340, JOHN SZAKO, Kenosha, Wis., U.S.A., Sept. 28, 1920. Claims allowed 2.—A.P.-C.

C-6. Wood sawing machine. Can patent No. 204,698, ARCHIE MACLEAN, Campbell's Bay, Que., Oct. 12, 1920. Claims allowed 2.—A.P.-C.

C-7. Pulpwood washing machine. Can. patent No. 196,373, JAS. L. PHILLIPS, Great Bend, N.Y., U.S.A., Jan. 20, 1920. Claims allowed 1. Same as U.S. patent No. 1,309,543. See Pulp & Paper, **18**, 81, C-7, Jan. 22, 1920.—A.P.-C.

E-2. Utilization of "sulfite turpentine". Can. patents Nos. 204,768 to 204,779, inc., The Selden Company, Pittsburg, Pa., Oct. 12, 1920. 204,768.—A process of nitrating cymene which comprises dissolving a mixture containing cymene and terpenes in strong H_2SO_4, adding to the soln. a mixt. of strong HNO_3 and H_2SO_4 while stirring and while maintaining the reaction mass at not materially above 0°C, until an amt. of HNO_3 corresponding to an excess of about 10% over the amt. theoretically necessary to form mono-nitro-cymene has been added, whereby the cymene is nitrated and the other ingredients are substantially unaffected. Claims allowed 9.

204,769—A dyestuff comprising a salt of the compd. diazo-cymene coupled with a hydroxy derivative of an aromatic hydrocarbon. A metal salt of cymene-azo-betanaphthol, being insoluble in water and of a brilliant reddish orange color, and capable of dyeing fabrics a brilliant reddish orange color. Claims allowed 4.

204,770. The herein described new class of dyestuffs comprising diazo-cymene coupled with an amino derivative of an aromatic body containing the naphthalene nucleus, at least one of the H atoms of said nucleus being replaced by the HSO_3 group. Claims allowed 5.

204,771—A process of making dimethyl-diisopropyl-benzidine which comprises reducing crude mono-nitro-cymene as produced by nitrating spruce turpentine, such reduction being performed in an alkaline solution to produce hydrazo cymene, and subjecting the hydrazo cymene to the "benzidine transformation", whereby dime thyl-diisopropyl benzidine is produced, and precipitating a compound of dimethyl-diisopropyl-benzidine while leaving a large part of the other constituents of the spruce turpentine in solution. Claims allowed 3.

204,772—A process of making the sulfonic acid derivative of amino-cymene, which comprises heating amino-cymene with H_2SO_4 of not less than about 98% strength until the reaction mass no longer contains uncombined amino-cymene, dissolving and neutralizing with an alkali, boiling with charcoal and thereafter again acidifying to precipitate the sulfonic acid. Claims allowed 2.

204,773—A process of making thymol which comprises rendering inactive the amino group of amino-cymene, nitrating the product, to produce a nitrated amino cymene compound, and thereafter removing the amino group and substituting OH in the place of NO_2. Claims allowed 3.

204,774.—A process of making dyestuff which comprises reacting with the tetrazo compound of dimethyl-diisopropyl-benzidine upon a hydroxy aromatic compound in an alkaline solution at a temperature not materially above 10°C. Claims allowed 6.

204,775—A process which comprises rendering inactive the amino group of amino-cymene, nitrating the product, and thereafter reducing the nitrogroup so introduced. Claims allowed 5.

204,776—A process of making dyestuff which comprises reacting with the tetrazo compound of dimethyl-diisopropyl-benzidine with an amino aromatic compound in an acid solution at a temperature not materially above 10°C. Claims allowed 5.

204,777—A class of S dyes derived from a N containing cymene compound, said dyes being capable of dyeing unmordanted cotton, and being of somewhat more brilliant colors, respectively, than the corresponding S dyes derived from the corresponding benzene compounds. Claims allowed 6.

204,778—The herein described new S dyes, derived from a para-amino-hydroxy-aromatic compound and amino-cymene or nitro-cymene by sulfurization, said dyes being soluble in alkaline solution, soluble in a solution of alkali metal sulfide and being capable of dyeing unmordanted cotton in an alkaline bath. Claims allowed 5.

204,779—The process which comprises vulcanizing rubber in the presence of amino-cymene, Vulcanizing rubber containing amino-cymene or its derivatives. Claims allowed 5.—A.P.-C.

E-2; F-2. Recovery of by-products from waste liquors. Can. patent No. 196,329, INGVAR SORAAS, Norway, Jan. 20, 1920. A process for the recovery of valuable substances from the waste liquors from pulp manuf. The liquor is protected against all oxidizing agents, by means of waste gases from autoclaves in which the oxidation has already taken place, and it is heated until it has reached such a temp. that the heat of reaction developed during oxidation raises the temp. of the liquor up to or above the temp. of pptn. of the substances which require the highest temp. to ppt. so that no supply of heat is required after the oxidizing agents have been introduced. Claims allowed 3.—A. P.-C.

E-2. Method of precipitating lignin in waste sulfite liquor. Can. patent No. 196,328, INGVAR SORAAS, Norway, Jan. 20, 1920. Claims allowed 6. Same as Fr. patent No. 487,953, May 17, 1918. See Pulp & Paper, **17**, 514, E-2, May 29, 1919.—A.P.-C.

E-5. Acid charging system for digesters. Can. patent No. 204,671, F. J. DOOLEY, Boston, Mass., U.S.A., Oct. 12, 1920. In an acid charging and steaming system for digesters, a steam conductor adapted for connection with a source of steam supply having a proportion thereof elevated above the acid level of the digester and extended downward and in communication with the interior of the digester below the acid level thereof, an acid conductor adapted for connection with a source of acid supply having a portion thereof elevated above the acid level of the digester and in communication with the similarly elevated portion of the downwardly extended steam conductor, and an acid control valve included in the elevated portion of the acid conductor. Claims allowed 3.—A.P.-C.

E-5; F-5. Automatic steam control for pulp digester. Can. patent No. 204,953 CARLETON H. ALLEN and The Great Northern Paper Co., assignee of a half interest, Millinocket, Me., U.S.A., Oct. 19, 1920. A pulp treating apparatus of the character described comprising in combination, a digester, means for supplying steam to said digester, and means for automatically controlling the rate at which said steam is so supplied to maintain substantially predetermined but variable temperature conditions in said digester during a predetermined interval of time. Claims allowed 14. (See also Pulp & Paper, **18**, 1041-2, Oct. 7, 1920.)—A.P.-C.

F-5. Process of treating resinous woods. Can. patent No. 204,982, JOHN T. COLLINS and ALFRED S. WILLIAMS, assignee of a half interest, Boston, Mass., U.S.A., Oct. 19, 1920. The process of treating resinous woods so as to produce a separation of the various products contained by means of the application of the chemicals NaOH and HNO_3 in combination to a mass of softened wood, and in the subjection of the whole compound to pressure and agitation by any convenient means so as to produce a separation of the products contained in the wood to best adapt them to commercial use. Claims allowed 6.—A.P.-C.

G-5. Method and apparatus for washing pulp. Can. patent No. 204,755, The Brown Co., assignee of O. B. BROWN, H. K. MOORE, and H. PARKER, Berlin, N.H., U.S.A., Oct. 12, 1920. A continuous process of washing fibrous material, which consists in continuously feeding said material to and washing it in successive baths of wash liquor, and causing the liquor to flow in the opposite direction to form such successive baths for the oncoming fibrous material. An app. for washing pulp, comprising a series of agitator tanks with agitators therein, and cylinder tanks with screen cylinders therein, all arranged in alternation, with means for permitting the flow of washed material from each agitator tank to the next cylinder tank, means for transferring the washed pulp from each cylinder to the next succeeding agitator tank, a plurality of communicating tanks having pools of wash liquor therein, means for circulating the wash liquor from each pool through an agitator tank and a cylinder tank, means for supplying to the pool, at the end of the app. at which the washed pulp is delivered, a stream of relatively pure wash liquor, and means for conducting from the pool at the other end of the app. the liquor containing the impurities washed from the fibrous material. Claims allowed 43.—A.P.-C.

K-5. Grinding apparatus for the manufacture of owod pulp. Can. patent No. 203,945, PETER CHRISTIAN SCHAANNING, Vestre Holman, Near Kristiania, Norway, Sept. 14, 1920. Claims allowed 19. A.P.-C.

K-6. Method for removing printer's ink from paper. Can. patent 203,587, The Jespersen Paper Co., New York City, Assignee of THOS. JESPERSEN, Neenah, Wis., Aug. 31, 1920. Claims allowed 5. (See Fr. patent No. 492,195, Pulp & Paper, **17**, 1026, Nov. 27, 1919; U.S. patent No. 1,311,564, Pulp & Paper, **18**, 301, K-6, March 18, 1920.)—A.P.-C.

K-6. A process for removing ink and coloring matter from printed paper. Can. patent No. 204,398, WESLEY M. OSBORNE, Carthage, N.Y., U.S.A., Sept. 28, 1920. A process of removing ink and coloring matter from printed papers, consisting of treating the papers in a digester to the action of sulphurous acid and sodium carbonate, applying heated steam to the solution, causing the papers to circulate slowly at first, gradually raising the temperature and pressure and cooking the contents of the digester rapidly, the pulp being bleached by the sodium sulphite produced by the reaction of the sulphurous acid and sodium carbonate. Claims allowed 3.—A.P.-C.

K-10; 18. Wall board size. Can. patent No. 196,913, The Beaver Co., Assignee of B. W. SIDWELL, Buffalo, N.Y., U.S.A., Feb. 3, 1920. Claims allowed 14. Same as U.S. patent No. 1,313,343. See Pulp & Paper, **18**, 301, K-18, March 18, 1920.—A.P.-C.

K-11. Paper machine. Can. patent No. 196,154, The Great Northern Paper Co., Millinocket, Me., Assignee of CHAS. E. POPE, Springfield, Mass., Jan. 13, 1920. In a paper making machine, upper and lower dryers, aprons therefor, and means adjacent one dryer to direct blasts of air in opposition on the web during its transition to the other dryer, said oppositely directed means arranged to act in substantially an axial direction on one dryer to strip the web therefrom and carry it towards the other dryer. Claim allowed 5.—A.P.-C.

K-11. Apparatus and process for making lines and watermarks on paper. Can. patent No. 196,157, Kansas Pappersbruks Aktiebolag, Assignee of ONNI SUURSALMI, Jyvaskyla, Finland, Jan. 13, 1920. The process consists in providing a series of apertures arranged in a manner corresponding to the desired lines or marks at predetermined points in the path to be traversed by the pulp during manuf., and supplying a regulated flow of water to some and a regulated suction to others of the apertures as the pulp passes over them. Claims allowed 3. Same as Fr. patent 496,612. See Pulp & Paper, **18**, 439, K-12, Apr. 22, 1920.—A.P.-C.

K-11. Felt cleaner for paper machines. Can. patent No. 196,497, E. D. BENNETT, Pulaski, N.Y., U.S.A., Jan. 27, 1920. A felt cleaning device for paper machines comprising a pipe having an open side adjacent the felt, and means for creating a fluid current in the pipe and through the open side thereof and adjacent portion of the fabric for removing any substance which may have become lodged in the felt, a pair of rollers for engaging the felt on opposite sides of the pipe, and means for adjusting the rollers to force the felt against the open side of the pipe. Claims allowed 1.—A.P.C.

K-11. Cloth for paper machines. Can. patent No. 196,909, R. SPENCER, Mosgrove, Lancaster, England, Feb. 3, 1920. A cloth applicable for jackets or couch roll covers, dry felts, etc., which consists in warp threads usually considerably larger in diam. than the weft threads, and the weft threads floated over a larger number of warp threads than they go under, the side which is mainly weft being the wearing side. Claims allowed 3.—A.P.-C.

K-11. Black Pulp screening device. Can patent No. 204,753, The Bird Machine Co., assignee of RALPH S. CLARKE, Walpole, Mass., U.S.A., Oct. 12, 1920. In a machine of the class described, the combination of a tank, a screen mounted for rotation therein, a spray pipe adapted to project a shower against the screen surface, a valve controlling the supply of water to said pipe, a constantly driven power element, a belt wheel in driving connection with the screen, a loose belt extending therefrom to the driven element aforesaid, a

(Continued on page 283)

UNITED STATES NOTES

Wage re-adjustments amounting practically to a return to the scale that was in effect prior to February 1, 1920, will be put in force in the plants of the American Writing Paper Company in the near future if the firm's officials can make the employee's representatives see their point of view. A 20 per cent. increase was granted February 1, 1920. The company management holds that with the 1919 wage schedule in force the workers' pay will be 125 per cent greater than it was before the war. Conferences on the proposed reduction are at present going on.

The Eaton, Crane and Pike Company of Pittsfield, Mass., manufacturers of fine stationery and distributors of the Crane papers of Dalton, have combined with Sinclair Allen & Co. of Toronto to form a Canadian branch under the firm name of the Eaton, Crane and Pike Company of Canada, Ltd. Its officers are president, Norman A. Sinclair of Toronto; vice-president, William H. Eaton of Pittsfield and secretary and treasurer, Thomas Allen of Toronto. The Pittsfield Company has been handicapped in establishing a Canadian branch by the import duty of 35 per cent.

The Pennsylvania Department of Forestry received word last week that 1,000,000 white pine trees shipped from Mont Alto and Caledonia State forests as a gift to the French Government for reforestation died because they could not be unloaded at a port. Shipping congestion prevented unloading before the trees dried up.

Philip Hano and Company, manufacturers of blank books and loose leaf systems are removing their plant from New York to Holyoke, Mass. They have secured a lease for two floors in the American Braiding Company Building, Holyoke, and they expect to have the new factory there in operation about the first of next month. The transfer of machinery is already under way. The Hano Company employs about 500 persons, many of whom are going to Holyoke from New York. The officials of the company are interested in a housing plan to furnish quarters for the newcomers and their families. The office of the company will be maintained in New York City. The manufacturing activities are being transferred to Holyoke because it is desired to be nearer the paper supply.

A bill to abolish division of waters in the Conservation Commission of the State of New York and to transfer engineering work relating to the flow of water and streams from the conservation commission to the State engineer and surveyor was introduced in the Legislature at Albany last Friday by Senator Ferris. Water power plans and specifications would have to be approved by a commission comprising the conservation commissioner, attorney-general and State engineer. Gov. Miller of New York, it is said, may soon send a message on the subject of water power in which he will recommend that the State take up development of the 1,200,000 horse power in the State and lease it for operation to private companies. Another matter the Governor has on his mind is doing away with the fire rangers in forest preserves, turning their duties over to the State Police, which shall establish a fire patrol by means of aeroplanes. It is understood that George D. Pratt, the Conservation Commissioner, is opposed to the latter scheme.

The Federal Power Commission last week granted to the Niagara Falls Power Compony a fifty year license to use 19,500 cubic feet a second of 20,000 cubic feet of water diverted from the Niagara River. This diversion is permitted by the terms of a treaty with Canada. The company is using practically the entire diversion under a consolidation of power companies effected as a war measure. Under the permit the company must hasten extensive improvements, extend a new transmission line across Grand Island to Buffalo and another to supply power to the Niagara, Lockport and Ontario Company. The additions required will increase the plant's output from 300,000 to 400,000 horse-power.

The American Pulp and Paper Mill Superintendents Association has made plans to hold its annual spring convention at the Waldorf-Astoria, New York City, June 3, 4, and 5.

Pulpwood consumption by mills in New York, New England and the lake States was 17.4 per cent greater in 1920 than in 1918, and production during the same period increased 17.5 per cent, according to estimates made public by the Forest Service, based on figures from 118 mills, representing 41 per cent of the total consumption of these States. The estimates were contained in the first preliminary statement by the Forest Service in connection with the study of pulpwood consumption being conducted in co-operation with the American Pulp and Paper Association and the Census Bureau. Should the percentage hold true for the remaining mills the 1920 consumption would equal 6,180,000 cords, or nearly 13 per cent more than the record made in 1917, and the production would be approximately 3,894,000 tons, or 10.9 per cent more than in 1917.

Leading paper and pulp mills in the United States and Canada will be visited in the near future by Hjalmar Wessel, a prominent Norwegian paper and pulp maker, who arrived last week in New York City on the steamship "Stavangerfiord", Mr. Wessel, who is chairman of the board of directors of Aktieselkopet Borregard, Kristiania, Norway, a concern which controls the well-known firm of Kellner-Partington Company, Ltd., Manchester and London, is in America for the express purpose of inspecting representative paper and pulp plants on this side of the Atlantic. Aktieselkopet Borregard is the largest pulp and paper concern in Norway and probably in the world. It has mills in England, Norway, Sweden and Austria.

The natives of the Niger gather immense quantities of butter from the butter-tree. It abounds in such great quantities that it is likely to become an article of commerce.

(Continued from page 281)

float controlled belt tightener acting thereon, and connections between said tightener and the valve for opening and closing same. Claims allowed 6.—A.P.-C.

K-12. Felt guide for pulp and paper machines. Can. patent No. 204,677, FRANCIS FORD, Bromptonville, Que., Oct. 12, 1920. In a device of the class described, a closed upright receptacle having a movable lower portion, a column of liquid in said receptacle supported by the movable portion, and means for maintaining air in said receptacle above the liquid normally at a pressure other than atmospheric, means for regulating said pressure controlled by the position of an element to be guided whereby the movable portion of said receptacle will be moved in accordance with the difference in air pressure above the liquid column annd against the movable vessel portion, a roll engaging an element to be guided, and operative connection between the movable vessel portion and roll. Claims allowed 10.—A.P.-C.

K-12. Paper machine press roll. Can. patent No. 204,733, HENRY H. VAUGHAN, Montreal, Que., Oct. 12, 1920. In a paper making machine, a pair of press rolls, one of which is movable laterally to and from engagement with the other. Clams allowed 3.—A. P.-C.

K-12. Method and apparatus for drying sheet material. Can. patents No. 204,316 to 204,319 inclusive, OGDEN MINTON, Greenwich, Conn., U.S.A., Sept. 28, 1920. The method of continuously drying paper, consisting in passing the web of wet paper into a vacuum chamber through a liquid seal which has no affinity for said paper, drying, flattening, and smoothing said web of paper in said vacuum chamber to obtain a flat paper with a smooth surface, and then continuously passing said web of smooth, flat and dry paper out of said vacuum chamber through a liquid seal which has not affinity for said paper. Claims allowed 26.

204,317; The method of drying sheet material consisting in passing said sheet material through a liquid seal that has no affinity for said sheet material into a vacuum chamber, then passing said sheet material in folds or loops through a bath of heated metal in said chamber, said bath having no affinity for said sheet material, regulating the degree of tension, if any, of the sheet material in the folds or loops to control the finished product, and then passing said sheet material out of said vacuum chamber through a seal which has not affinity for said sheet material. Claims allowed 32.

204,318; Method of continuously drying sheet material, consisting in continuously feeding it into a vacuum chamber and passing the sheet material adjacent to a heated medium but not in contact with it, and withdrawing the sheet material from the vacuum chamber without breaking the vacuum. Claims allowed 34.

K-12. Automatic paper carrying device for paper machine. Can. patent No. 203,984, The Great Northern Paper So., Millinocket, Me., assignee of CHAS. POPE, Springfield, Mass., U.S.A., Sept. 14, 1920. In a paper making machine, the combination with a plurality of web supporting devices separated by a substantial distance, of means for automatically transferring a lead strip of the web from one of the said devices to the other against the influence of gravity, comprising app. for producing 2 adjacent substantially parallel air blasts, between which the lead strip is passed, whereby the blasts will guide the lead strip in a definite path from one of the said devices to the other, and a deflector against which the blasts are directed and which is curved to deflect the currents of air and thereby guide the lead strip in a curved path. Claims allowed 10.—A.P.-C.

K-14. Process and apparatus for seasoning and rectifying paper stock. Can. patent No. 204,527, GEORGE E. POGGELL, Louisville, N.Y., U. S. A. Oct. 5, 1920 The process of seasoning and rectifying paper stock consisting in blowing currents of heated air upwardly between the sheets while the latter are suspended within an enclosure and conducting the heated air after passage between the sheets, exteriorly thereof back to the point where it is blown between the sheets, thereby maintaining a cycle of travel of the air so that it is made to pass and repass between the sheets. Claims allowed 9.—A.P.-C.

K-18. Apparatus for winding paper cardboard. Can. patent No. 204,964, Jas. Spicer & Sons, Ltd., assignee of JAS. S. HOLMES, London, England, Oct. 19, 1920. Claims allowed 8.—A.P.-C.

K-18. Weather board. Can. patent No. 196,140, the Bestwall Mfg. Co., Chicago, Assignee of M. K. ARMSTRONG, Winnetka, Ill., U.S.A., Jan. 13, 1920. A weather board for roofing, siding, and the like comprising a base consisting of an intermediate porous plastic or rigid body and top and bottom coverings of paper adhered to said plastic or rigid body, a waterproof covering of asphaltum for the base, and a protective covering of crushed stone, tile, or the like, on the top covering of the base. Claims allowed 3.—A.P.-C.

K-18. Machine for making reinforced fiber board. Can. patent No. 204,024, B. G. DAHLBERG, assignee of T. B. MUNRO, St. Paul, Minn., U.S.A., Sept. 14, 1920. In a machine of the character described the combination of a tank, means for maintaining a head of water in said tank, means for giving said water mixed with fibers a swirling motion in said tank, a pair of travelling foraminous surfaces between which said swirling water and fibers pass, means for compressing said fibers as they leave said tank and surfaces, and means for supporting a travelling foraminous reinforcing material between said foraminous surfaces. Claims allowed 3.—A.P.-C.

K-18. Machine for making double-faced cellular paper-boards. Can. patent No. 204,728, GEO. W. SWIFT, Jr., Bordentown, N.J., U.S.A., Oct. 12, 1920. The combination of a series of mechanisms adapted to simultaneously corrugate paper web and apply facing sheets or webs upon opposite faces of the corrugated web and means for applying an equalizing tension upon the facing sheets or webs, with a drying table or support arranged tangential to the face-applying mechanisms in the plane of application and the second facing sheet. Claims allowed 12.—A.P.-C.

K-18. Fiber plaster board. Can. patent No. 204,705, CARL G. MUENCH, International Falls,. Minnesota, U.S.A., Oct. 12, 1920. The process of making plaster board which consists in felting cellulose fibrous material to form a board having substantially rectangular ribs upon one of its surfaces, and subjecting said ribs while the board is still moist to the action of a plurality of sets of forming rolls to change said ribs to a dovetail shape, whereby a better plaster bond is secured. Claims allowed 6.—A.P.-C.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, March 5.—Unsettled conditions still prevail in the pulp and paper industry and business generally is dull, although increased business in some lines is taken as an indication that trade is about to pick up. Careful enquiry elicits the information that from the mills, down the line to the wholesalers, stocks are either piling up or have piled up to a point that makes it imperative to curtail production, which is taking place at most of the plants. Few of the pulp and paper mills are running full and the product in many cases is not finding an outlet. The market for both pulp and paper is distinctly a buyer's one with a downward tendency, with the result that practically all along the line there is a hesitancy on the part of the buying public to stock up until the market is beyond the chance of dropping to a still lower level. Price reductions are still taking place but they do not always attract trade. To the buyer they are indications that a deferred order will make him money if he waits for a still further drop in the market. The point has apparently not been reached where the printer and consumer have to have paper although that stage cannot be far away and when it comes it is the conviction, in some circles, that there will be nearly as much buying of paper as in the boom days. In the meantime the printers still complain of a dullness in trade with comparatively little work going through, which means that they are not buying paper. Add to these conditions the threatened competition of American paper houses, and it will be seen that all the business the Canadian mills and jobbers get in the immediate future they will have to dig for. American paper firms are doing a lot of direct mail advertising with Canadian paper houses and are offering book and other papers at attractive prices, although with exchange rates as they are the American houses have not seriously undersold the Canadian paper firms, but they are contributory causes to the unsettled condition of the paper market. As indicating the dullness in the printing and allied trades, it is stated that in Toronto some of the bindery departments have laid off hands and some of the printing staffs are running short time.

BOOKPAPERS.—The book paper trade has not yet got down to a stable basis and jobbers are in the position of not knowing just where they are at. Effective March 1st another cut of 10 per cent. went into effect on a number of lines of paper and there is speculation as to whether or not bonds and ledgers will undergo a reduction.

BRISTOLS DOWN.—The week saw a drop in Canadian-made bristol boards of three cents per pound, the price now ranging from 11c. to 16c. per pound, according to grade and variety. Cover paper remains firm in price and is unchanged.

SULPHITE DRUG PAPERS.—Further reduction went into effect last week in sulphite drug wrapping, the decline representing twenty per cent. Prices of tissues and toilets remain unchanged with a fair amount of business for the mills.

COARSE PAPERS.—Further reductions in the prices of coarse papers were arranged last week, to go into effect on Monday, March 7th. The reductions represent an average drop of two cents per lb. Grey brown and white wrap are down to 7c; "B" manila 7½c.; No. 1 manila 9c. and fibre $8.50. Kraft has been reduced from 11½c. to 10c. per lb.

PULP.—There is absolutely no market in pulp and no transactions are taking place. Mills that are manufacturing for their own paper as a rule are confining their operations to their own requirements and other pulp mills are stocking up. In a market where there is little demand pulp mill representatives are making deals in a competitive market and a paper mill can usually get five dollars a ton knocked off his quotation by negotiating with a couple or more pulp mills. Even on this basis very few sales are being made. Negotiations for bleached pulp usually start with a quotation of from $135 to $140 with unbleached at $95 to $100 and ground wood in an open market as low as $60 a ton. One theory advanced by a well-known pulp manufacturer for the unsatisfactory condition of the pulp market places a measure of responsibility on the paper retailer and publishers into whose hands, together with those of the consumer, the finished product ultimately comes. It is charged that the deflated prices of pulp are not passed along as they should be and that the retailer is charging as much for paper as he ever did, thus shutting out the general public from participating in the lower prices for raw stock and causing general dissatisfaction, with its reaction on the condition of the pulp market.

NO CHANGE IN THE PULP AND PULPWOOD MARKETS.

The identical conditions existing in the pulp and pulpwood markets are expressed by a stubborn deadlock which during the past three weeks has shown no indications of loosening up other than the possible danger that the "guage shift" of prices may spring into reverse from its neutral position. This bearish sentiment may be attributed to the following facts: In the first place, a great many paper mills, especially in the United States, who are dependent for their supply of raw material either as pulpwood, pulp or both have been idle in the past few months. At the time of closing down most of them had several months supply of raw materials on hand. Consequently, they are in that respect the same way off as they were then and therefore are not likely to want any more for some time to come. Those of them that have started operations are quite unwilling to pay the low prices now prevalent because they think that fair levels have not yet been reached. They also contend that production costs are too high to compensate them for the prices now offered for all papers in the paper market. Of course, there are some commodities which have come down, but present wages still offset any gains made by these cuts.

Taken as a whole, there has probably never been anything quite so complicated as the situation which makes itself felt, and very uncomfortably so. Prices are practically off any base and not a few figures

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that have been demanded, or offered, approached the ridiculous. Whether reports of such quotations are fabulous or really the unhappy result of chaos is hard to say. Many sellers in evident mood of distraction have sought the quickest but least practical way in which to liquidate their holdings. In cases of that kind the stories have it that these dealers departed with their pulp or pulpwood holdings for a price bordering on what might be termed "commercial suicide".

In all this sombreness there is, however, a ray of hope. A short time ago, rumors had it that German print paper was being dumped on the New York market at prices which far undersold that of any offered by North American dealers. It is quite possible for Germany to do this because a few cents can be translated into many marks. And this stunt would have met with success had the Germans been able to furnish publishers with newsprint of a quality that compares with that of the kind turned out on this side of the Atlantic. Before they can possibly hope to compete with the goods of the Canadian and American papermakers, it will be necessary for them to manufacture a print paper that can pass through the presses over here, without so many imperfections. One may ask why this should have anything to do with the pulp and pulpwood market, either one way or the other. As an answer it may be well to point out the fact that one of Germany's strong points in the field of industry has been her paper; but, of course, before the war. Their forestry methods have been such as to enable them to yield more per acre of pulp wood than other countries. Therefore, while they never went extensively into the foreign paper markets, it is reasonable to assume that such would be their object now when every effort has to be exerted to its fullest extent in order to help pay off the enormous debt which hangs over their heads. The probable reason for the inferior grade of German print paper may be traced to causes revealing shortage in such materials as are necessary for the production of a good sheet. From all of this it can easily be understood that there would be perceptible falling off of demand for any raw materials in this country, were Germany able to launch out on any large project along those lines.

A CONSERVATIONIST.

Lecturer (in loud voice): "I venture to assert there isn't a man in this audience who has ever done anything to prevent the destruction of our vast forests."

Man in audience (timidly): "I've shot woodpeckers."

NEW YORK MARKETS.

New York, March 5. (Special Correspondence). — All branches of the paper industry have continued to experience quietness this week. Manufacturers are operating their plants on greatly curtailed schedule; some are closed down tight, and few, if any, are running at full capacity. Jobbers report a decidedly slow demand for paper of every kind. Printers and other consumers are buying in cautious fashion, invariably confining present orders solely to supplies directly required, and it cannot be said that there is a concerted movement of paper of any grade in any single direction. Contract business constitutes the great bulk of trade activity. Publishers and other buyers of paper on contract appear to be getting along under prevailing circumstances without having to resort to fresh buying in the open market and there is little in the way of important business stirring in the spot market.

News print has again weakened in price. Sales of spot news in standard rolls at as low as 5 cents per pound have been reported, and if the assertions of newspaper publishers are to be relied on, there have been purchases effected even down to 4.50 cents. The spot market for print paper is distinctly weak. Few publishers are operating as buyers except in an occasional way when in want of an extra small tonnage to fill in contract shipments, and there is a surplus of paper on the market. The erratic condition of the spot market is having but little influence on the contract situation at present but it is obvious that if prevailing circumstances continue the effect on the contract market will be serious. There seems no denying now that the influx of news print from foreign sources was one of the basic causes making for weakness in the market here. Reliable estimates place German and Scandinavian news print importations into the United States for 1921 consumption somewhere between 100,000 and 200,000 tons. This is a comparatively small amount as against the tonnage of print paper consumed in this country, but it is ample to wage an important influence on the market.

The fine paper situation is marked by easiness and dullness. Buyers are absorbing but small lots of paper and are confining their purchases almost entirely to the low and medium qualities of bonds, linens and ledgers. Few high-priced lines are finding a sale today, and the aggregate demand made upon mills is not sufficient to keep them operating at even two-thirds full. Throughout mill centres in the New England district matters are reported very bad. Some plants are closed down tight; others are running

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but two or three days per week. Some of the most popular lines of bond paper are selling at prices denoting a decline of 7 to 8 cents a pound from the levels prevailing not so long ago. One of the most widely used water-marked brands of bond paper, which several months ago was hard to secure at 26 cents a pound, is today freely available at 18 cents at the mill. Prices on nearly every grade of fine papers have decreased in about similar proportion.

There is a fair demand for coarse papers. Domestic No. 1 kraft wrapping is moving in moderate volume at a price basis of about 8 cents per pound at mills, with No. 2 kraft quoted at 7 cents, and there is a relatively good call for bogus wrappings and other coarse papers. Tissues are quotably steady at around $1.75 for No. 1 white and are marked by some activity.

Book papers are easy and mills with few exceptions are looking for business. Machine-finished book is quoted in the open market at 10 cents and less per pound, and contracts have been accepted by manufacturers at a cent per pound below this price. Increased weakness has developed in box boards. There have been sales of plain chip board in the New York market at as low as $30 per ton delivered this city and of filled news board at $32.50 delivered. Even at these prices consumers are absorbing little board. The situation is such that boxmakers do not require usual amounts of board and they are unwilling to anticipate forward requirements, feeling that it will to their advantage to pay more later on when they need board than to lay in stocks at today's prices while not knowing what the future will bring forth.

GROUND WOOD. — Ground wood continues in a dull and unsettled market position. Board mills are keeping almost entirely out of sight as buyers and other consumers are absorbing but light amounts of pulp, and in the absence of actual transactions it is difficult to figure out what definite market values are. Some of the foremost grinders in this country and in Canada are asking $65, and even higher, at producing mills for No. 1 spruce ground wood, but it is doubtful whether they are effecting sales at such a basis, because about the only business reported passing locally is at prices ranging between $45 and $50 per ton at mills. This would indicate that there is sufficient of the so-called "distress" stocks of pulp offered at present to cover buyers' wants, thus leaving producers who are asking higher prices out of the running.

CHEMICAL PULP. — There is little doing in the chemical wood pulp trade. Consumers mostly are indifferent and are staying out of the market except when occasionally they are in immediate need of a small parcel of pulp, when they come in and buy merely enough to supply actual wants. Prices are irregular and are at best nominal. An encouraging feature is that dealers and importers are not pressing matters. Most of them are adopting a waiting policy and letting the market run its course, presumably feeling that prevailing conditions cannot last indefinitely and that when consumers are in need of supplies they will come into view. Moreover, domestic manufacturers in many cases are curtailing their production during the present dull period, which is helping to prevent the piling up of a large surplus stock of pulp. Importations also are down to a minimum. Importers say they cannot buy at primary sources today with the hope of making a profit under prices prevailing here, and are limiting their operations to placing orders on the other side given them by mill customers.

RAGS. — The papermaking rag market is quiet and easy. Further declines have been recorded in prices on numerous grades, and the downward movement of values does not seem to have yet been checked. Mills are buying in very sparse amounts, and in frequent cases refuse to show interest in offerings regardless of the prices named. No. 1 white shirt cuttings have sold down to 13 cents a pound delivered mills, although dealers contend that a more representative market basis on this grade of rags is around 14 cents. No. 1 washables have sold at 6 cents f. o. b. New York, fancy shirt cuttings at 8 cents, new light silesias at 8.50 cents, and black silesias at 4.75 cents. Old rags are about as dull as are new cuttings, and current quotations are at around 8 cents on No. 1 repacked whites, 6.50 cents on No. 1 miscellaneous whites, 2.50 cents on repacked thirds and blues and $1 per hundred pounds on No. 1 roofing stock. Roofing rags are about the only grade wanted by mills in sizable volume, and there is relatively a much firmer tone to prices in this end of the market than any other.

PAPER STOCK. — Waste papers are in limited demand and the trend of prices is still downward. No broad changes on low grades have occurred because prices in this respect are down to levels where they can scarcely go lower, being at a point where packers insist they cannot produce stock and realize a profit. High grades, however, have sunk further, and sales of No. 1 hard white shavings have been reported at 4 cents a pound at shipping points, No. 1 soft white shavings at 3 cents, ledger stock at 2.25 cents and heavy No. 1 books and magazines at 1.40 cents. Folded newspapers are moving to board mills in restricted volume at around 55 cents per hundred pounds and No. 1 mixed papers at 40 to 45 cents.

OLD ROPE AND BAGGING. — A fair inquiry exists for old rope and paper mills are said to be absorbing comparatively good amounts at a price range of 4 to 4.25 cents per pound for domestic Manila rope in No. 1 condition. Old bagging continues to be neglected and prices are strictly nominal. Offerings of No. 1 scrap bagging at 1.50 cents a pound and of No. 1 gunny bagging at 2 cents at shipping points are meeting scant response.

CZECHO-SLOVAK PAPER PRODUCTION.

It is estimated that approximately 44.4 per cent of the paper produced in the former Austro-Hungarian Empire in 1913 was manufactured in the present territory of Czecho-Slovakia. According to the data of the Czecho-Slovak ministry of Commerce and Industry, quoted in the "United States Commerce Reports, there are 234 Czecho-Slovak concerns making paper and paper products; 85 mills make special grades of paper, 54 make cardboard, and 76 make pulp (9 manufactured chemical pulp). Before the war all these concerns employed about 17,000 workmen; at present almost 26,000 are employed.

Canada's Mills, numbering less than half of the Czecho-Slovak, employ more men.

Pride goeth before a fall, and it doesn't help to soften the bumps.

Pulp and Paper Magazine

OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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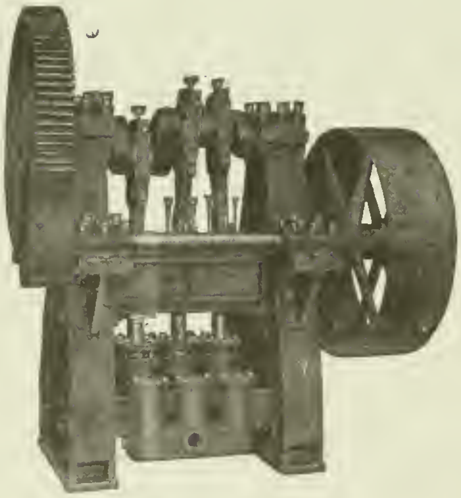

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EDITORIAL

THEY WANT MORE WOOD.

If the Province of Ontario or any one else interested in the matter wants a concrete illustration of the need for an accurate up-to-date survey and estimate of timber actually standing on pulpwood limits that illustration is provided in the application of the Spanish River Pulp and Paper Mills for an additional supply of pulpwood. This company operates three mills. It is understood that considerable extensions to one of these plants have been made on the assumption that pulpwood from a limit recently acquired would be sufficient to maintain the increased production. It is now discovered that the wood on this area is by no means adequate and the Ontario Government is now in the somewhat inconvenient position of having to grant additional limits or deliberately jeopardize continuous manufacturing operations by this mill. Thus several thousand Canadians, dependent on the mill for employment, are in danger of being out of work.

A similar situation developed but a short time ago with regard to the Lake of the Woods limit. This area was acquired by E. W. Backus and his associates with the understanding that a pulp and paper mill of certain size would be erected to use the pulpwood thereon but an inspection of the property after it was acquired showed that the timber thereon would not warrant the erection of such a plant. Steps were consequently taken which have resulted in the acquirement of the English River limits which will provide material for a mill to be erected at Kenora.

The two situations are quite similar. The Government, if reports are correct, sold what did not exist, namely pulpwood sufficient to operate the pulp mill for which the limits were bought. On the other hand, the companies apparently depended too much on the Government's estimate of available wood. The result has been somewhat embarrassing to the Province of Ontario and not particularly satisfactory to the companies. The whole difficulty as we see it, lay in the lack of accurate information or even approximately reliable information as to the amount of timber on these limits. It may have been foolish for a company to purchase without adequate inspection but as to the Province, we fail to see how a concern can hope to do business in a businesslike way without an approximately accurate inventory of its stock. This is just what our Governments are doing when they fail to determine the extent and value of their woodland possessions. A fairly accurate knowledge of available water powers has been collected and, once obtained, such data does not vary very greatly from year to year, whereas the condition of the forest is changing almost every month and certainly every fire season makes it essential that there be at least a new estimate of damage by fire, fungus, insects and wind and a correction of the forestry maps.

The perfection of the aeroplane leaves no excuse now for not entering immediately a fairly accurate statement of damage sustained each year so that there would be an up-to-date inventory of the timber stand on the various water sheds of each province. Comprehensive and especially prompt information of the rapidly changing conditions of our forest resources is absolutely necessary if we are to have a competent administration and proper development of this part of Canada's natural wealth. Occasionally a mill is located where the water power is insufficient and others are established or extended without entire certainty that the supply of wood is adequate for the continual operation of the mill at the capacity for which it is built.

If we are to maintain Canada's supremacy in the Pulp and Paper markets of the world we must maintain, without any chance of doubt, the proper balance between mill capacity and the re-production of the forest. In other words no one should be permitted to establish a mill whose capacity is greater than can be supplied by the annual growth of a forest area accessible to the mill and without express stipulation that this area shall be so operated that the mill shall use only such annual growth in its operation. The basis, therefore, of such administration of our forests is an adequate and an immediate inventory of their location, character and extent.

THE CANADIAN AUTHORS' ASSOCIATION.

Mention was made in our last issue of the convention of authors, called at the instance of the Canadian Bookman, in Montreal last week. It was a success in every respect. At the banquet on Friday night were ninety-six literati (if our Latin is correct, but to be sure, we'll call them writers). Saturday's session saw the formation of the Canadian Authors' Association. Lest anyone should look on such an organization as merely a "Mutual Admiration" or "Tea Tipplers'" society, we need only mention that Canadian authors are vitally interested in one of the most puzzling problems before Parliament, the matter of legislation regarding copyrights.

Several bills, which have been introduced, have not been enacted, and a new bill will soon come up for the second reading. The question is complicated by the number of conflicting interests affected; among them are, besides the author, the publisher, the labor element, phonograph, pianola, and film companies and, finally, the reading public. Such a situation is only solved by a compromise. Up to this time the author has not been able to speak through an organization, as is the case with some of the other elements interested. This disadvantage is well met by the appointment of a committee consisting of R. J. C. Stead and Miss Madge Macbeth of Ottawa and Arthur Stringer of Chatham, Ont., to act jointly with the executive of the Authors' Association with regard to the Copyright Bill. No one element can hope to have all the benefits possible from legislation, but a committee representing such an association can do much to avert actual injustice.

The convention was considerably agitated in trying to define "author". We are not sure yet whether an ordinary periodical "pen-pusher" is an author and whether his work is "literature", but one can never predict what blossom will grow from an unpromising bulb.

Our town of Ste. Anne de Bellevue was honored in the selection of Mr. J. Murray Gibbon, as president. Mr. B. K. Sandwell, who recently resigned as managing-editor of the Journal of Commerce was elected Secretary. This historic town is really quite a hot bed of literature, of budding authors, as it were. Mr. Gibbon has written several novels, including "Drums Afar" and "The Conquering Hero"; Capt. Frederick William Wallace is the author of "Blue Water", "The Shack Locker" and "Viking Blood"; Mr. J. J. Harpell compiled "Canadian Commerce, Industry and Finance", Prof. Lynde wrote "Household Physics", and other members of the MacDonald College Faculty have contributed to Canada's already enviable record. This does not complete the list, but will show that it is not inappropriate for the Industrial and Educational Publishing Co., to launch the Canadian Bookman and provide motive power for a while. The time will soon come when the reading public appreciates what Canadian authors have for them to enjoy. It is to encourage the development of Canadian literature that the Canadian Bookman is published.

COBWEBS.

Pulp mills in Wisconsin are getting wood faster than they can handle it, at $11 to $18 per cord for hemlock. There will evidently be plenty of pulp, but the price of sulphite cannot very well go much lower without meeting the cost of manufacture. Pulp mills realize that they cannot sell pulp to a paper mill which cannot use it because the jobber cannot buy the paper so long as the public refuses to purchase. It is a modern version of "The House that Jack Built." In this case we want an economic structure built on firmer confidence in the stability of Canadian and American business.

Canadian contracts for exports of newsprint are practically all on uniform basis now with Spanish River and Abitibi quoting 5½ cents for the next quarter.

HE WAS HUMAN.

He was human, but, Oh, so thoughtless.

He awoke to the jarring note of an alarm clock, not made in Canada.

Then he shaved with soap, brush and razor, which were imported. So habit sent his money to another country.

Feeling that the morning was well started, he ate a hearty breakfast, consuming pancakes and a pet brand of coffee bearing labels of an outside manufacturer, and then was ready for the day's work.

Arriving at his office, he found a batch of morning mail awaiting his perusal. Some of these contained offerings from many points of the compass and he seized upon one or two presenting bargain prices and profit possibilities and overlooked the fact that importation of such material was working against his country's trade balance.

Routine work completed the morning up to the time of signing his first mail, before he went to lunch, and this now engaged his attention. He did not know the watermark on his letter paper. If he had raised it to the light, he would have found it did not show the "Beaver S" and that it was not "Made in Canada."

Having signed his letters, he went to the club for lunch and engaged in a serious discussion with his friend as to the wonderful trade possibilities ahead of Canada.

After lunch, having previously forgotten it, he went to his bank and asked for a draft on New York for several hundreds which he was to send his wife, about to return from Florida.

An explosion soon followed. The premium on New York funds had recently made a big jump. He was mad, then madder, and, finally, he was red roasting hot. To pay such a price for the mere privilege of spending money had aroused a violent oscillation in his brain—a condition in which man is better silent than otherwise.

Later he returned to his office.

But wasn't he human?

Just a bt thoughtless, perhaps. — From "The Crest".

A. P. & P. A. MEETINGS IN APRIL.

The official call for the Forty-fourth Annual Meeting of the American Paper and Pulp Association is just going out from the President of the Association. This letter is going to over one thousand men having to do with the manufacturing, converting and merchandising of paper in the United States. It is probable that the Annual Meetings of April 11-14, 1921, will see the greatest gathering of the paper industry ever held in New York City.

Problems of the greatest importance to the paper industry will be discussed at this Annual Meeting of the American Paper and Pulp Association, and at the various annual meetings of its affiliated organizations. Questions dealing directly with the specific business of manufacturing and merchandising paper will be discussed. It is a time for the paper industry to get away from generalities and to make these meetings the place for plain talk as to conditions concerning the industry.

It takes a wasp to make a lazy man get a move on himself. All it has to do is to back up against him and push.

Steam Power in the Paper Mill

A discussion of the means of securing high efficiency in the generation and use of steam by the correct selection and application of steam specialties.

By H. J. BARTLETT, Crane Company, Chicago.

Of recent years the belief has been frequently expressed that hydro electric plants will soon become the chief medium of developing the power used in all our larger industries. There is no question as to the low cost of power generated by such plants, but when the cost of transmission and the overhead charges are taken into consideration the economy is not so evident and may be completely neutralized. For example, at Niagara Falls is located the largest water power development in the United States. For years the low cost of electricity in that region has been so well known that many large industries have located near the Falls. And yet, just recently, a steam power plant has been put into operation at that point which delivers a kilowatt hour at the switchboard for less than it can be produced by the water power plants. It, therefore seems reasonable to believe that, while hydro electric power will be an increasingly important factor in paper mill operation, steam will always be the primary medium for developing power and supplying heat for the various paper making processes.

To successfully operate a steam plant which will compare with a hydro-electric plant, it is necessary that the entire system of generating, conducting and using the steam be maintained at its highest commercial efficiency at all times. What that commercial efficiency is depends largely on the correctness of the original design and the care with which the various equipment was selected for the work it was to accomplish. It is not necessary to go into the design of power plant apparatus, for in nearly all cases it will be found that such equipment is capable of an efficiency far beyond that possible to attain in ordinary usage. To select this equipment correctly and maintain it on its original plane of effectiveness is a very important feature of power plant work.

Starting in the power house, we find that boiler losses are many and in some cases unpreventable. For instance, the heat losses in the chimney gases, the losses in heating the moisture in the coal and the losses in heating the moisture in the air entering the furnace are all inherent and as such cannot be avoided. Such losses are due to air leakage around the boiler setting, poor boiler covering, scale and soot on the tubes, insufficient or excess air supply and poor damper regulation are preventable and should be given the closest attention of the operating force. There are, however, a number of other losses incurred in operating the average boiler plant which are seldom given any recognition.

Take, for example, the matter of pop safety valves. This valve is, beyond question, the most important valve on the boiler. Its purpose is to permit, automatically, the escape of steam to the atmosphere if an excessive pressure is reached in the boiler. The increased horse power, high pressure and temperature of modern boilers has made it necessary to design pop valves suited to the new conditions, which require valves of great relieving capacity and extreme sensitiveness to excessive pressures. The old-fashioned lever and weight safety valve has become obsolete for any save low pressure work, and the type of valve in which boiler pressure is resisted by a spring is rapidly supplanting all others.

The desirable characteristics of any pop safety valve are:

1. High discharging capacity.
2. Small blow-down or difference between the initial and final pressure.
3. Minimum waste of steam.
4. Absence of wire-drawing at the seat.
5. Prompt seating without hammering.
6. Interchangeability of parts.

In addition, the valves should be equipped with some method of regulating the blow-down so as to prevent unnecessary waste of steam. Valves with the spring outside the valve body proper give superior service over those having an inside spring, as in the former the spring is not exposed to the deteriorating effects of the high temperature steam.

The Boiler Code of the American Society of Mechanical Engineers requires that all power boilers having a capacity in excess of 2,000 pounds of steam per hour shall be equipped with two or more pop safety valves. It can readily be demonstrated that the use of two small pop valves is an economy over the use of one large valve. For example, suppose a boiler working at 100 pounds pressure requires a 4½'' pop valve set at 105 pounds. Every time this valve pops it discharges 145 pounds of steam per minute. Now, assuming that two small pop valves were used, we find that two 2½'' valves are sufficient to handle the required amount of steam. One of these could be set at 104 pounds and the other at 105 pounds or 106 pounds. When the 2½'' valve pops it discharges 80 pounds of steam per minute. Thus, if the valves blow for thirty seconds, the big valve wastes 72 pounds of steam and the small one 40 pounds, a saving of 32 pounds of steam at every pop in favor of the small valve. Assuming that 6 pounds of water are evaporated or made into steam per pound of fuel, this means a saving of 5 1/3 pounds of coal at each pop. With two poppings a day — a conservative figure — and 365 days a year, there is a saving of approximately 4,000 pounds of coal a year through using two small valves rather than one large one.

There are further advantages in using two safety valves instead of one. It is easier to keep a small valve tight. There is less danger of lifting the water in the boiler if the valve should pop when the water level is high. Two valves double the safety factor in plants where there is considerable scale in the water. Furthermore, firemen will regulate the drafts more readily in an endeavor to prevent the second valve from blowing after the first has popped.

Another of the large sources of waste around a boiler is the blow-off line. Due to the nature of its work, a blow-off valve is much more likely to cut out (score) than an ordinary valve, as it must handle gritty water, scale and other boiler impurities. For that reason they should always be made extra heavy, with renewable seats and discs. It is advisable to have the seating surface away from the path of the sediment and scale and to provide some means of cleaning the seat. The only way to insure an absolutely tight blow-off line, of course, is to use a two-valve combination, or cock and valve. By this method it is possible to keep one valve tight at all times and the resulting saving in coal will pay for the extra valve and the cleaning and grinding necessary. In blow-off work, valves should always be installed with the pressure on top of the disc. It should always be borne in mind that it costs money to heat feed water and pump it into a boiler, and that any waste through the blow-off lines is a distinct loss.

In supplying feed water to a boiler too little attention is paid to the fact that the hotter the feed water the greater the efficiency of the boiler.

Theoretically, ten degrees rise in the temperature of feed water gives one per cent saving in fuel. Practically, the use of very hot water adds to the life of the boiler, reduces the amount of scale inside the boiler and reduces the cost of the upkeep. Feed water heaters, using exhaust steam from the engines, will supply water up to 250 deg. F., and economizers, utilizing the waste heat in the flue gases, will heat the water up to 350 deg. F. Unless there is a considerable head on the suction line to the pumps, however, there will be considerable difficulty experienced in pumping water at a temperature in excess of 200 deg. For this reason it is seldom, indeed, that a paper mill is found in which the feed water temperatures are above 230 deg., and the average is nearer 180 deg. Nevertheless it is entirely possible to feed boilers with water up to 400 deg., if the correct apparatus is used.

Ordinarily in plants where a large amount of condensation is returned to the boilers it will be advantageous to install a direct return trap system. Consider for a moment the temperature of steam at various pressures. At 10 lbs., pressure it is 240 deg.; at 50 lbs., it is 298 deg.; at 100 lbs., it is 338 deg., etc. So long as the condensation at these various pressures is kept from venting to the atmosphere it will retain its original heat, minus an unimportant loss by radiation from the piping. In the direct return system the condensation returns to the boiler through a closed system of piping in which no atmospheric vents are used. That is to say, if the condensation comes back to the boiler room at 338 deg. it is fed into the boiler at practically that temperature. Furthermore, all the heat drawn from the boiler for the operation of the system is returned in the feed water. The only loss incurred is from direct radiation.

The operation of this system is simple in the extreme. All condensation is returned to a large receiving tank placed well over the direct return trap, which in turn is 4 ft. or more above the water level in the boiler. Water flows into the trap tank by gravity from from the receiver through a swing check valve. During this period, all the accumulated steam in the trap tank is vented through a positively operated vent valve back into the receiver, where it gives up its heat to the incoming condensation. As soon as the weight of water in the trap tank is sufficient to overcome the counterbalance, the tank tilts to the bottom of its yoke. In doing so, it closes the vent valve and opens the steam valve which is directly connected to the steam space of the boiler. As a result of this operation, the steam pressure in the boiler is transmitted to the trap, and closes the inlet check valve. Water will then flow from the trap to the boiler by gravity. As soon as the tank is emptied, it returns to a filling position, closing the steam valve and opening the vent. It is then ready to begin another cycle.

In addition to the saving made due to the higher temperature of the feed water used, there is a further saving to be made by the use of this system instead of a feed pump. Direct acting pumps as a class are wasteful of fuel and low in efficiency. The average small duplex boiler feed pump uses in the neighborhood of 200 pounds of steam per horse power with a mechanical efficiency around 50 per cent. At these figures, the pump uses close to 10 per cent. of all the steam generated by the boiler. The steam cylinder on a pump is usually two and one-half to three times the volume of the water cylinder. This means that for every cubic foot of water fed into the boiler approximately three cubic feet of steam are required. On the other hand, in the direct return trap the amount of steam required is the same, volume for volume, as the water displaced and fed to the boiler. The saving in steam used is obvious.

Considering the steam piping from the boiler, it is becoming increasingly necessary from a safety standpoint to use non-return valves on each boiler when two or more are connected to a common header. These valves are designed to cut out the boiler on which they are placed in the event of a tube or a manhole gasket blowing out and thus lowering the pressure sufficiently to cause a back flow of steam from the header. They also regulate the flow of steam from the boilers to the header so that in firing each boiler maintains the proper pressure. Should one boiler, due to incorrect or careless firing, drop in pressure, the non-return, or stop check, valve will cut out this boiler until it reaches the correct pressure. Each boiler must, therefore, supply its full quota of steam and this means increased efficiency.

THE Y TYPE STEAM VALVE.

Without these valves on the boilers, the problem of cutting a boiler into the header became a serious one. The usual practice was to have the pressure inn the boiler being cut in somewhat in excess of that in the header. In many cases, the boiler was fired up until the pop valves simmered or blew. This resulted in a needless waste of steam. Stop-check valves will cut themselves into the line automatically as soon as the pressure in the boiler equals the pressure in the header.

In the design of valves of this type, extended experiments have demonstrated that those having the minimum number of moving parts are the most desirable. All internal weights, levers, springs, dash pots and the like should be avoided, as they have a tendency to wear and work loose and thus obstruct the operation of the valve. It has been found that valves of the "Y" pattern type, with the discs inclined at an angle of 45 deg., allow smooth travel of the moving parts so that reasonably heavy discs can be used without cumbersome cushioning devices. By using a throttling lip on the disc the use of a dashpot is almost entirely done away with, as the disc must lift the length of the lip before steam begins to flow, and the disc and seat are then so far apart that there is no danger of hammering or chattering of the disc. It is also advisable to see that the operating parts of the valve can be removed from the valve body without taking the valve itself out of the line, as this will greatly facilitate making repairs.

It is very important when selecting stop-check valves to see that the proper size is used. Too large a valve causes chattering, pounding and rapid wear of seat and disc, even in the better type of valve. A valve too small offers too much resistance to the flow of steam and will result in a large pressure drop between boiler and header. Too frequently in past practice the size of the opening on the boiler has determined the size of the piping used. Modern practice indicates that stop-check valves based on an approximate steam velocity of 4,000 ft. per minute at nominal boiler rating will give the most satisfactory service.

The advent of high pressures and superheat is responsible for the elimination of many of the older systems of piping, the tendency being toward greater uniformity of design. In any system of piping, the fundamental object is to conduct the fluid in the safest and most economical manner. The material used should be the best obtainable and the system so flexible that a break down in one element will not necessitate the closing down of the entire plant. It is a safe general proposition to say that the best pipe and fittings irrespective of first cost will prove the most economical in the end.

Modern practice tends to make all main steam headers as short as possible, as small in diameter as practical, and with the minimum number of joints. A single piece header, preferably cast because of its high factor of safety, connected to the boilers by long radius pipe bends, will give the best results with minimum loss through radiation and leaks. With properly designed bends, all expansion strains may be taken care of and this further reduces the opportunities for leaks at the flanges. Each apparatus of any nature requiring a large amount of steam should have a separate lead out of this main header and each lead should be valved off with an outside screw and yoke gate valve. Long steam lines leaving the header and passing from one building to another or through tunnels, should be protected with line protection valves operating on the velocity principle. Such valves will automatically close should a break occur in the line and thus prevent a large waste of steam as well as protecting workmen in the buildings through which the line passes.

Connections from headers to engines should always be made with pipe giving a steam velocity of not less than 6,000, and preferably 8,000 ft. per min. The cost of the reduced piping plus a large receiver separator is in many cases less than the cost of larger piping and a standard steam separator. This is particularly true if the difference in the cost of the pipe covering is taken into account. With the smaller piping and the large receiver, condensation is reduced to a minimum, vibration is eliminated, and the number of leaky joints is reduced.

In a great many paper mill plants pipe line drainage is not given the attention it deserves. Traps, when used, are of the cheapest kinds; discharge piping from the traps runs to concealed locations or hot wells and is never inspected. It is really remarkable what a saving in coal consumption can be made if traps are regularly inspected for tightness and the condensation so piped from the traps that none of the heat is lost. If the condensation is in sufficient quantity the best place to put it is into a direct return trap system such as was described in a previous paragraph. It must be borne in mind that there are a number of places in which open drip lines should be installed, or equipped so that they can be tested. For instance, the stop-check valve, the gate valve next to the header, and the water column should all have open blows or test connections. All other bleeder lines or drips should go to traps. A later paragraph in this article will discuss the different types of traps and their advantages and disadvantages.

Steam from boilers not liberally provided with superheating surface usually contains an amount of moisture varying from 3 to 5 per cent. under normal conditions. If the boiler is poorly proportioned or forced far above its capacity this percentage may be greatly increased. In addition, the condensation in the pipe line further reduces the quality of the steam (per cent of water in form of gas), the amount of the reduction depending on the length of the line and the efficiency of the covering. The effect of this water is varied. It increases the density of the steam and reduces its elasticity. It also increases the conductivity so that more heat is absorbed from the walls of the steam cylinders and discharged into the exhaust without doing useful work. If the water accumulates in large quantities, material damage may result to the engine.

To eliminate these harmful effects, it is essential that the water be removed from the steam before entering the engine. To accomplish this purpose, separators are employed of various types and principles. Whatever the type or principle, however, the proper requisites of a good separator are high efficiency as a water extractor, ample storage capacity for any sudden influx of water, simplicity and durability of construction, and small resistance to the flow of steam passing through. Many separators possess some of these qualities, but the number that possesses them all is limited.

It is a well known fact that the efficiency of separation decreases as the velocity of the steam increases. For that reason, separators should be of large area. But reduction of velocity alone will not produce effective separation unless the entrained water in the steam is brought into contact with a surface to which the water may adhere. The ideal way to accomplish this is to provide corrugated baffle plates with the corrugations inclined in such a way that the water is rapidly drained from the surface, preventing the steam from again picking up the water already separated. Baffles in horizontal separators should extend completely across the separator, thus preventing steam carrying water from escaping past the plate. In separators of this type, the steam, on entering, strikes the baffle with greatly reduced velocity and after losing the entrained water passes over the top, guided by the curved walls of the head and is deflected against the opposite side of the baffle before passing into the main. It will be noted that the steam rises to the top of the separator while the water is drained to the bottom. This is a very important point, for no matter how efficiently the water is removed from the steam, the entire benefit of the separator is lost unless the water is kept from contact with the dry steam.

No separator is effective unless means are provided for automatically removing the accumulated water of condensation. The most practical way of doing this is by the use of properly designed steam traps.

Since a trap is primarily a device for automatically opening and closing valves, it follows that the method used in performing this function is its distinguishing characteristic. On this basis all traps belong to three general classes, which we will call for convenience, the buoyancy, the expansion and the tilt. Each of these classes has numerous subdivisions, but the principle of operation for all the variations of each class is the same.

In the buoyancy type, the movement of the valves is controlled by a float, either open or closed, which rises and falls as the condensation flows to the trap and is discharged. All buoyancy traps are of the continuous discharge type, that is to say, the valves are open, or partially open, so long as the flow of condensation continues. If the trap is properly selected for size, it will reach the point of maximum discharge with its valves wide open only when an abnormally large amount of condensation reaches it. During normal operation the valves will be only partly open.

The expansion type depends for the operation of its valves upon the expansion of a metal or some volatile fluid. In this type the valves will be wide open so long as condensation flows to it, but will shut off when steam reaches it. Due to its method of operation, the movement of the valves is necessarily slow both in opening and closing. It has no storage space for water and consequently the valves are working continuously.

STEAM SEPARATOR.

The tilting trap relies for the power to move its valves upon the action of the trap tank in tilting when the weight of water it contains is sufficient to overcome its counterweight. This type of trap is intermittent in its discharge and has valves which open and close quickly.

Any valve controlling the movement of water has a tendency to cut out at the seat and disc when partially open. Trap valves in particular are subject to excessive wear due to the high velocity of the water passing through them at the pressures ordinarily encountered in trap work. The wearing action of water at comparatively low velocities needs no illustration here; its effect is multiplied many hundreds of times if the water is hot and under high pressure. The only successful solution of this difficulty is to open the valve wide enough to remove the disc from the path of the water. If it is possible to make the opening of such a size as to reduce the velocity of the water passing through it, the wearing effect will be still further reduced. Normally, as has been noted, the buoyancy trap valves are in a partially open position if the trap is of sufficient size to handle the slugs of water that are bound to come to it from time to time.

Under these conditions, the valve disc is directly in the path of the water being discharged. Instead of having the velocity decreased through the valve, it is greatly increased due to the fact that traps of this type must have small valves or the float will not have sufficient power to move them against the steam pressure in the trap. Thus the normal cutting action at the valve is greatly increased in traps of this type. Experience has proven this statement true beyond all question.

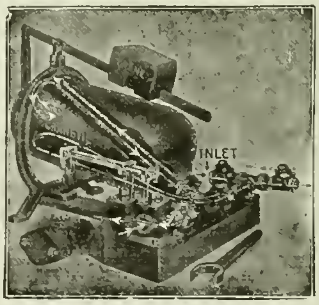
In the expansion type trap the valves move slowly. Instead of being carried quickly beyond the reach of the rushing water they move so slowly as to greatly increase the inevitable wire drawing effect between the seat and disc. While the expansion trap can be made to operate intermittently it is impossible to give its valves the snappy opening and closing required for good trap work. Due to its lack of storage capacity the valves are moving continuously and the wearing effect is therefore noticeably increased.

In the tilting trap the valves are always wide open or closed depending on whether the trap is in a discharging or filling position. The movement of the tank is rapid in going from one position to another and consequently the valves open and close rapidly. However, unless they are designed to be of the balanced type or actuated by some force aside from the tank motion, they will have the same defect of increasing rather than decreasing the velocity through them. Any increase of velocity will have the effect of increasing wear and reducing discharging capacity. In this type of trap, it is possible to so design the valves that they will be completely out of the path of the water, the velocity over the seat will be decreased, and the discharging capacity will be equal to the amount of water that can come through the inlet pipe.

In general it would seem that all the desirable features of perfect trap operation are centered in the tilting trap alone, providing it has been carefully designed. Experience has proven this to be true. Both expansion and buoyancy traps while low in first cost are by far the most expensive when figured on a basis of cost per pound of water handled.

Their valves cut out with great rapidity. Since they have no moving parts exposed defective valves are not easily discovered and consequently the waste of steam through them is inordinately large. Too much attention in the past has been paid to price, and not enough to capacity which is primarily a function of good valve design.

The need for automatic devices to reduce and regulate properly steam or air pressure has increased greatly with the prevailing use of high pressures and the increase in process work. Not all power apparatus is adapted for high pressure nor is it economical to use a greater pressure than that actually required to do the work. Wherever it is desirable to accomplish reductions in pressure, a regulator should be used. Such valves are adapted for use with engines, pumps, turbines, paper machines, vulcanizers, cookers, dryers and various other process work.



A TRAP OF THE TILTING TYPE.

The nearer correct the regulator is to the required size, the longer it will last. The best service will be obtained from a valve that is practically wide open all the time when steam is being used. If it is too large for the service required, it will supply steam in surges or by throttling, thereby causing wire drawing through the valve and pulsations in the line. If it is too small, particularly on low pressure work, it will dance and chatter and soon wear out. The best results can be obtained when the purchaser gives the manufacturer all the service data explaining the use of the valve and then selects a valve based on the manufacturer's capacity tables. Pipe sizes alone should not be considered in determining the proper size of valve.

The cardinal points in the design of a regulating valve are reliability, simplicity of operation, accessibility for inspection and convenience in making repairs. It is entirely possible to make a valve in which the body acts only as a container for the operating parts. The advantage of this construction is that the valve can be repaired without being removed from the line. Furthermore, should the moving parts wear out, as they inevitably will, it then is a simple matter to insert new parts and obtain practically a new valve at minimum expense and trouble. It is also desirable that the valve be so designed that it can be inspected while under pressure, as this will greatly reduce the delay incident to locating the source of any trouble.

Nearly all paper mill plants have one or more back pressure valves. Too little thought has been given in the past to selecting the proper type of valve for this service. Generally it may be stated that all back pressure valves should be of the positive seated type. Any of the balanced seatless type are wasteful for a number of reasons. In the first place, they leak steam. On a 10'' seatless valve operating at 3# back pressure, the leakage amounts to 100 pounds of exhaust steam per hour, which equals the heat value of 11½ pounds of coal burned in a boiler operating at 70 per cent efficiency. On a plant running 24 hours a day and 365 days a year, this loss would amount in a year's time to 50 tons of coal.

Another source of waste in the seatless type of back pressure valve is due to the fact that these valves have no definite opening and closing points. When installed in an exhaust line they perform the same function as the safety valve on a boiler; that is, they relieve any excess pressure beyond that at which they are set. Assuming that a seatless type valve is used, set to relieve at 5#, it frequently happens that the valve does not close until the pressure drops to 2#, which ordinarily takes a minute or more. Under these conditions, a 10'' valve would discharge 110 pounds of steam per minute at 5# pressure, whereas if a positive seated valve were used, it would relieve the system and close in 15 seconds, thus saving 82 pounds of steam per minute. This amounts to 7,500 pounds of coal per year, figuring two blows per day and 365 days per year.

It is a common thing in many paper mills to find all the large pipe lines covered and the smaller ones bare. This practice is undoubtedly due to ignorance of the vast amount of heat that can be lost through radiation from small pipe lines. For instance, one square foot of bare pipe, carrying steam at 100# pressure, radiates the heat from one-third of a ton of coal per year. This means that at this pressure 9 ft. of 1'' pipe, not covered, will waste one ton of coal per year. To conserve as much of this heat as possible, every foot of every pipe line carrying steam should be covered with a high-grade insulating material. Not all pipe coverings have the same efficiency and the manufacturer of such material should always be consulted before purchasing. Because covering is white and looks nice on the pipe does not mean anything. The better the quality of the covering, the longer it will last and maintain its insulating efficiency.

THE CAP THAT FITS OR "PAPER AS IT IS MADE."

"Gerald, dear," said my wife the other evening, "I wish you'd write and order some more notepaper; we've hardly any left."

"All right, Margaret. What sort do you want? The last was beastly—too thick to make into spills and not large enough for drawing up the fire."

"Well, here's a list of the different kinds they have in stock at Jones and Robinson's."

I took it from her and glanced through it. "What do you say to 'Cream Laid,' Margaret? I like the sound of that. It will make me so nice and cool in the hot weather to think of the rows of fresh-faced country girls, in their spotless white overalls, pouring the cream delicately over the paper. I wonder how they get it to stop exactly at the edge?"

"It wants a very cool head and steady hand, I expect," said Margaret; "they'd all be picked cream layers, of course. But how would you like thick hand-made paper with deckle edges. What are deckle edges, I wonder; and how is paper hand-made?"

"Rather like treading grapes, I fancy, only that's done by foot. I mean they smash up the pulp with a very heavy pestle in a huge—"

"Mortar!" cried Margaret triumphantly.

"Yes; but am I telling this story or are you? Well and then they put it through a mangle—"

"Wurzel," said Margaret.

"Wrong, just a mangle, and roll it out flat, after which they deckle the edges."

"But how do they do that, Gerald?"

"Oh, they just call in the edge-decker and say, 'See to't that yon edges be deckled ere set o' sun,' and he sees to't. His is a most important post, I believe."

Margaret came and sat on a tuffet by my chair.

"Sorry about wurzel," she said. "Now tell me all about machine-made paper, there's a dear. It will be so nice to be able to tell Nat when he's older."

"Paper-making by machinery, my dear," I said graciously, "is a most complicated process. I won't puzzle you with all the details, but roughly—the idea is to pulp the — er — rags and so on in a huge sort of — er — bowl, and then to roll it out thin in the rolling out machine."

Margaret thought this over. "It sounds just the same as the hand-made," she said.

"Oh, no," I said quickly, "it's all done by machinery you see. Pistons and rollers and—er—mechanical edge-decklers and so on."

"And what does 'Linen Wove' mean?"

"They employ people to thread the paper with linen threads, my dear. A very delicate performance; that's why Linen Wove is so expensive. Azure Wove is, of course, done with blue flaxen threads. Silurian Bond is made by a fellowship of geologists, and for Chelsea Bank they have a factory on the bank of the Thames at Cheyne Walk. That's all I need tell you, though I know a lot more."

"I never realised before how awfully interesting paper-making could be, order me a good supply of Chelsea Cream Wove, will you dear? Oh, and some other kind for yourself, to write your stories on. Don't forget?"

"Very well; Chelsea Cream Wove for you. And what shall I have?"

Margaret's mouth twitched a little.

"Foolscap, I think, dear," she said. — (From "Punch.")

News From Europe

(Compiled by Dr. Paul Bartholow.)

Bolshevist Propaganda.

According to a French journal Bolshevik commissioners charged with the dissemination of Soviet doctrines are gathering up all the stocks of paper in Finland, putting their hands not only on present supplies, but assuring themselves of the future. By an odd paradox, says the French paper, a bourgeois State is furnishing a government which is an enemy of all bourgeoisie the elements necessary for its propaganda.— Le Courrier du Livre, February, 1921.

Sweden and Canadian Competition.

The wood pulp market is still in the hopeless condition of being without any demand worthy of mention. The English paper makers have considerable stocks on hand, while, on the other hand, the greater number of mills have restricted operations to one-third for lack of orders. The wood pulp market is like a sick man who has taken too much medicine, that is, bought much more than he needs and must therefore be left in undisturbed quiet. To offer pulp at lower prices only irritates the paper maker and has a depressing influence on the market without leading to any business. With regard to France and Italy the course of exchange in francs and lire exercises an unfavorable influence on shipments to those countries, the industries of which are out for German competition. Even the American markets make less favorable reports of activity in the paper mills. The result is that English firms are studying the possibilities of large sulphite and groundwood stocks in Canada. Yet if prices of coal, pulpwood and other materials for paper-making continue to fall in Sweden the Swedish mills need not for the present anticipate a great increase of competition from Canada. Cost of cellulose and groundwood in Canada have also shown a sufficiently distinct tendency to rise.—Svensk Pappers-Tidning, February 15, 1921.

German Trade.

It is reported from Leipzig that preparations for the new Fair are in full swing. The last Exhibition did much to revive business activity. The outlook is said to be improving and affords an indication of how far German industrial life has overcome the difficulties of the previous year. Doubtless the coal shortage is undiminished, and imposes a heavy burden on industry, curtailing production. Yet in spite of this handicap and the uncertainties of the future, it appears that new undertakings have been started, and they are apparently judiciously financed and ably directed. This is due not only to trade exhibitions, but to the advent of a new school of financiers who recognize that they must produce what the foreign markets want, and what other countries cannot do without. There are several ways of accomplishing this object, the chief of which are the manufacture of goods of better quality and the development of technical skill. It is believed with the progressive rehabilitation of industry their number will increase. Nevertheless there are still the uncertainties of the Government's schemes — the increasd railway freights and taxes and until traders are enlightened concerning the toll to be taken in these and other forms, it is premature to anticipate a great revival of interest in business. The prospects of the paper industry are generally regarded as favorable. The number of different grades of paper exhibited at Leipzig was notable, even among the 15,600 firms which displayed their goods.—Papier-Markt, February 10, 1921.

Politicians and Paper Makers in France.

In December free-traders and hack politicians set loose in the Chamber a tempest of gusty rhetoric. Less than fifteen days later the parliamentary wind had veered around to the opposite direction. In fact on December 16 ministers took an unexpected leap, and politicians afraid of a hand-full of ribbon-makers proceeded to ladle out protectionism of the go-as-you-please sort, like a nurse administering jam and rhubarb to a family of pimply children. (ce pele, ce galeux!)

As for paper, no one was willing to speak of duties. A law, which cuts blindly at the manufacturers of paper, was hustled through as a cure for uneconomic prices. It abolishes the duties on paper for the daily and periodical press and for books.

However, though matters have passed from conception to realization, the economic conditions of France are improving little by little. Coal, which is more plentiful, is notably lower in price, and the price of paper, intimately associated with that of coal, will fall off in turn. If the publishing industry follows this movement the dangerous position of the French press, French books, French thought, which was imputed to the paper makers, will be relegated to the stock of grotesque phrases in the politicians' *thesaurus*, because the public prepared for docile admiration and belief, can no longer be deceived.—Le Papier, January 1921.

The Strikers in Swedish Mills.

The strike in the cellulose mills, which commenced about a week ago, unfortunately threatens to spread to the whole paper industry. The mills in Sundsvall and in the Harnosan district have stopped, and also the mills at Edswalla, Skoghall and Frederiksberg. These mills have a yearly output of about 260,000 tons of sulphite and 85,000 tons of sulphate cellulose. Last week the diminution of output was 9,900 tons of sulphite and 280 tons of suphate a day. On Monday the workmen at Wallvik also struck, and there are rumors that the laborers in the Vermland mills are preparing to strike. —Affarsvarlden, February 16, 1921.

MADE IN CANADA.

For the year ending November, 1920, Canadians imported goods valued at $1,345,582,300 as against $920,082,927 for the previous year, an increase of purchases from other countries amounting to $425,499,373.

Of the total, $927,564,711 worth, or over 68 per cent, came from the United States. On those imports Canadians paid exchange reaching as high as 17¼ per cent (On December 21, 1920, exchange reached a record where the Canadian dollar was only worth 81⅞ cents in United States funds). Canadians are still sending their money to the United States and paying heavy exchange in spite of the fact that thousands of Canadian workers, who are able and willing to produce the most of these imports, are out of employment because Canadian factories are running part time or closing down because they lack orders for goods. The unemployed men and women and their families are being supported at the public expense, involving an additional burden to tax payers.

If Canadians united in a resolve to buy Canadian made goods, as far as possible, instead of imported goods, most of the problems of trade depression and unempoyment would be quickly solved. — The Crest.

Transactions of the Technical Section

THE VENTILATION OF PAPER MAKING ROOMS.

By H. S. TAYLOR.

(Continuing the discussion of papers presented at the annual meeting of the Technical Section. The address was printed in this magazine on Feb. 17th.)

MR. TAYLOR concluded: There is nothing new about the system. You perhaps have one just like it in your mills. The point I wanted to make clear is that the principle is to remove all the moisture from the room, and not simply to prevent a high degree of condensation and drip, but not to leave the moisture within the room, to slowly deteriorate the enveloping structure.

MR. MASON: I would like to ask Mr. Taylor if he has worked out any method of efficiency for this method of ventilation? What efficiency do you think it is possible to obtain under operating conditions?

MR. TAYLOR: Mr. Mason, my answer is that there is a question of what we shall compare it with—with what other system?

MR. MASON: What I meant was, what heat units are provided—what proportion of them are actually used to take out the moisture? You must introduce more heat units than are actually required. If you put in one hundred units, how many of those heat units are actually working?

MR. TAYLOR: You can make figures. You can do a great deal of figuring on this system, but the question of figures is not always true. We figured out the heat units that would be introduced, and I have given that number as 2,400,000 for the conditions assumed. Now, that amount varies, of course, with the outside temperature; for a condition of twenty degrees below zero that number is required, but so far as I know they are working on an installation that is not one of absorption—excepting for a small amount—I would say probably fifteen per cent is absorption, and the balance is sweeping. In other words if you take a broom and sweep dirt or snow, there is only a small part of that snow actually touches the broom, it does not absorb very much, and the sweeping out of water vapor is like that; the number of heat units I have mentioned is what is required to keep the rough walls dry. If you put less than 2,400,000, you will find evidence of moisture. As an example of that, last winter I was in one of the mills and the room was dry; I went down and shut off the steam, and inside of fifteen minutes everything was wet and beginning to drip. Then we turned the steam on again and began to shut the air down, and the same condition took place, which showed that to prevent the wetting effect was taking a certain amount of air, irrespective of the heat, but shut the heat off and you got dampness right away.

MR. CASE: Did you make any tests to determine the moisture conditions? I take it the air is more than saturated. Part of it would be in the nature of supersaturation?

MR. TAYLOR: We have had tests made, but I have no figures here. The point you mention is one reason for the demand for hoods. In installations that we had a few years ago the hood was put up under the roof trusses, say seven feet over the top of the driers, but cold currents got across to that before the air could get under these hoods, causing fog, so we put the hoods close to the machines, and now the moisture condenses out of doors, where it should.

MR. BRASSINGTON: I would like to ask Mr. Taylor a question with respect to the temperature he has spoken of. I have had some experience under trying conditions, mostly along the Atlantic Coast, and the States where the saturation of the air in the first instance runs over sixty-five per cent. and we found that it paid us to put in a refrigeration plant and sprinkle the incoming air with cold water, and cause it to precipitate its own moisture, and at the same time remove the impurities, because air has a rapidly increasing voracity for moisture with rise of temperature, and I thought I would take this opportunity of asking whether you have any data covering the proper incoming temperature according to the different outside conditions of humidity.

MR. TAYLOR: I might answer that question in this way. We never attempted removing moisture from the air coming in. We thought of moisture in the air going out. The point is to have that air coming in as dry as possible, which we accomplish by heating rather than cooling.

MR. BRASSINGTON: My particular problem was dry powder, and we could not dry it unless we put in a little refrigerating plant back of the fans, so as to drop the air down to about 40 deg. F. and then it would precipitate its own moisture, so that the air going into the intake of the fans had that much less moisture in it. It would be too expensive to operate, but I was wondering if in your practice you made any investigation as to the efficiency of your apparatus with respect to the humidity of the incoming air. Up here in Canada, where the air is very dry, that problem would not come up, but when you get down to the moist air near the tropics, it would be well worth knowing.

MR. TAYLOR: You speak about the moist air further south. You take it where you have a warm temperature, and you are not under the same conditions as you have in the north. It is the low outside temperature that gives you the greatest trouble.

THE CHAIRMAN: I observe from Mr. Taylor's remarks that he believes in cutting down the glass area in machine rooms. Is there any rule observed, Mr. Taylor? (and I want as much light on that as possible.)

MR. TAYLOR: We have no accurate figures on that as yet. We have a number of machine rooms, and we really use one window to the bay, and the size of that opening depends a great deal on the heat of your room. It has been the custom in some mills to put in a large area of steel sash, and we cut those down to one window where you have a large machine room. You do not get much light through to the center bay anyway. With a single window, say five lights wide, and of a height that will fit in between your crown beam and the proper height above the floor, will give you light enough. That is our idea of it. Some other operators would not do it. It is a question of the operator himself in most cases.

MR. WARDLE: I want to congratulate Mr. Taylor on the excellent paper. Some of you might be interested in a new ventilating system in connection with our new machine. It follows very closely Mr. Taylor's suggestion — very closely indeed, both as to quantity and as to general practice. We have the regular roof trusses, steel construction, and steel columns, about six feet centers, and on top of that we have concrete slabs, avoiding anything that can rot. On top of that we place three inch. wide pine planks, culled planks, the cheapest we could buy, and with the regular tar and gravel roof on top of that. That may sound like an expensive roof, but it is not. It is a ridiculously small amount to pay for the insulation that you get. It gives very satisfactory results indeed, and as far as loss of heat goes, you can readily see the difference between that roof and the roofs of the other buildings, after even a light fall of snow. The snow stays on that roof and everything else is bone dry.

On the under side of this one I speak of, we used metal lath and plaster, thus giving us an air space of thirteen inches in height above the top of the truss. That extends the whole width of the room, and we introduce our air into that space, so we have the entire length under pressure, as Mr. Taylor has outlined is necessary.

The air is introduced into that room through little register openings, which are adjustable, through this plaster ceiling underneath the columns. These are according to our best judgment, particularly at the walls and the ends of the room, and all that air is made to pass directly toward the driers.

MR. TAYLOR: I might give one other little illustration on the question of circulation. You notice on the street a number of shop windows with fans in them — simply small, electric fans circulating the air, and you will see no frost on such a window. You probably will see frost on the next window, which has no fan. That is a question of circulation. There is no condensation on the window. It is being carried away.

MR. BRASSINGTON moved a vote of thanks to Mr. Taylor for his excellent paper. It was seconded by Mr. Mason and carried unanimously.

STRENGTH TESTING OF PULP.

By K. G. WILEN.

Mr. Wilen's paper was published in the Pulp and Paper Magazine for January 20th. 1921.

The discussion follows:

MR. BRASSINGTON: I got the notion that it was extremely important, from the paper maker's point of view, whether he used air-dried pulp or machine dried pulp — whether you would get a stronger paper if you used air-dried pulp than by machine dried pulp.

MR. WILEN: No, that impression is not quite correct. It has been found that pulp that has has never been dried at all produces a better paper than the others, and the difference between air-dried and machine-dried pulp is not very big. Drying in any shape or form weakens the pulp.

MR. HOVEY: I would like to ask if you did this work on beaten or unbeaten pulp?

MR. WILEN: We have determined the strength of the pulp unbeaten, and then beaten, for different lengths of time, and we have found there is no relation whatever between the strength of the unbeaten pulp and the strength of the pulp which can be developed by beating. As a matter of fact, there is no difference between the unbeaten sulphite and kraft pulp, when you beat them both for an hour, the sulphite will come up one hundred to one hundred and ten percent, and the kraft about one hundred and sixty percent. In regard to their unbeaten strength, the pulps are equally strong.

MR. BRYANT moved that the Section extent a vote of thanks to Mr. Wilen for this very interesting paper. MR. SLACK seconded the motion which was carried unanimously.

Financial Statement.

The financial statement was read as part of the Secretary-Treasurer's report.

MR. STEPHENSON: May I have the pleasure of moving the adoption of that report? In doing so, I would like to call attention to the fact that balance for the vocational and educational committee is pretty rosy, yet there is quite an amount standing against it in the way of obligations to authors who have turned in manuscripts. I think all of them received an initial payment on account, but there still remains a large portion to be paid on the completion of the manuscripts and the publication of the books. I want to say, especially that some men have not only agreed, out of their limited amount of time, to prepare a manuscript, but some of them have been so wonderfully generous as to offer to do that without expense to the Association, and our very hearty thanks are due them, and I so move.

The motion carried unanimously.

Chemical Standards

The report of the committee on Chemical Standards was read by title and adopted as printed in the Pulp and Paper Magazine for Jan. 20.

(To be continued.)

WHAT THE NATIONAL FORESTRY PROGRAM COMMITTEE HAS ACCOMPLISHED.

The "State Forest Policies" proposed in the report of Nov. 11 of the Committee on Forest Conservation of the American Paper and Pulp Association, are the basis for an active campaign for state legislation in Wisconsin.

The Union League Club of Chicago invited all the governors and forestry officials of eight states, Ohio, Indiana, Illinois, Missouri, Iowa, Michigan, Wisconsin, and Minnesota, to hold a conference at Chcago, Feb. 24, to formulate similar policies for all of these states.

These two statements show the momentum attained by the campaign for a national forest policy in which the American Paper and Pulp Association has been no inconsiderable factor.

It was realized last fall, that the campaign needed a definite organization with the special task of agitation for forestry legislation in Wisconsin in pushing agitation for forestry legislation, so the National Forestry Program Committee was formed with representatives of the paper, lumber and wood using industries, the American Newspaper Publishers Association, forestry associations, technical foresters and others are members. R. S. Kellogg, a member of this Association Committee, is chairman, and Warren B. Bullock, secretary.

The Snell bill has already been introduced in Congress, hearings held, and the campaign is progressing more rapidly than its most enthusiastic supporters had thought possible.

17 DEATHS, 26 FINGERS, 3 THUMBS.

That is the total number of serious accidents from 45 members of the Paper and Pulp Section of the National Safety Council for ten months of the year 1920.

"Mull" this over and when you go down through your plant today. Remember, if it is possible for an accident to happen at any place—an accident will happen there. Make your plant safe!

A New Canadian Enterprise

The Building of Paper Machinery by Port Arthur Shipbuilding Co., Limited.

Some will ask why this great shipbuilding company whose well deserved reputation as the builders of no less than forty-six sea-going vessels, many of which are on the seven seas, others on the great lakes, amongst them being the "W. Grant Morden," the largest of all on the great inland seas, should embark in the manufacture of paper machinery.

The answer is easily given. This large shipyard has expanded during the world war to dimensons that exceed in capacity the possible demands of the marine world during times of peace, for freighters that carry the products of our civilization to the ports of the world.

GENERAL VIEW OF PLANT.

Why paper machinery? Because, with the possible exception of the steel industry the pulp and paper trade is the greatest of all manufacturing enterprizes; Canada will be the greatest producer of pulp and paper of all the nations in the world and Port Arthur is the natural spearhead of this great shaft of industry in the Dominion. In or near Port Arthur should be located a reliable source of supply of the tools of the paper trade.

Outside of the mere facts which naturally govern the decision arrived at by a manufacturing concern considering the marketing of a new line of machines there is also something fine, something fascinating, something almost romantic in serving the paper trade.

The paper trade is one of the most ancient trades. Excellent writing paper was made by the Chinese from fibrous material having in its substance the fibre of the cotton plant reduced to pulp, according to Mr. Stanilaw Julien, as early as the year 152 B.C.

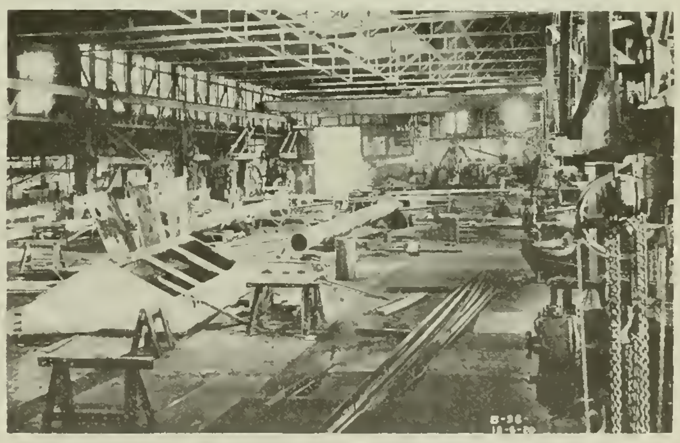
Paper is a necessity, if only for its service to the colossal self-conceit of the average human being. This conceit is partly due to our superiority over all the other animals on earth and partly because it is natural to us. It is evident that such a race would be exceedingly anxious that its achievements, experiences and observations, individually and collectively, should pass into record. It is to this very pride or self-conceit that we owe our present state of civilization; it is to this very pride or self-conceit that we owe our present state of civilization; it is to this quality, together with our industry that we owe our progress; it is above all, to this quality that we owe the art of paper making, and if that art were forgotten there could be no progression of human thought beyond a very circumscribed mental area.

No other material used in the arts has more manifold uses and possibilities. There seems to be nothing used by men that cannot be made of paper. It is the vehicle of our correspondence, both printed and written; it is used for:

Bags, wrapping paper, barrels, fruit baskets, pails, buckets, powder, kegs, carpets, mattings, car wheels, pulleys, collars, cuffs, curtains, sheets and panellings, observatory domes, furniture, picture frames, roofing felt, roofing tiles, racing shells and boats, twine, journal bearings, packings, belting, lead pencils, underclothes, clothes, blankets, towels.

They even make bricks, gas pipe, horseshoes and foot gear for men from this magic material.

Can anyone measure the value of an art that produces the material on which we record the thoughts of the great ones of our race? Who cares to talk with the present day great, whose claims have not yet received the endorsement of time? Who would hover round the door to catch a patronizing smile when the company of the greatest of all times is at our command because we have made paper and because our fathers and grandfathers for generations have made paper and printed books. We can, therefore, because we have paper, chose our company and invite to sit with us by our study fire the brightest and best of mankind. We can even insist that this selected company be in its very best humor and in its most entertaining and most instructive mood. Furthermore, we have the privilege of closing such interviews as soon and as curtly as we please, by quietly closing our book, with a grateful knowledge that no hurt can be felt by the great sensitive souls we ask to entertain us.



ERECTING SHED.

We may feel, as we pass a pleasant hour with each great mind, as though our visitor was saying: "This you are reading is the best of me; as for the rest, I ate and drank and slept; I loved and hated like any other: my life is now but vapor and sound; but this you read I saw and I knew and if there be anything of me worthy of your memory and your attention you have it now in your hand."

The fact that paper exists permits us to enter into this society of the great. All may enter: if we desire the companionship of the noble we have but to become noble ourselves; if we long for the conversation of the

FIRST FLOOR—JOINER SHOP.

BOILER SHOP, LOOKING NORTH.

wise we have but to learn to understand it. In these modern days we are making enough paper to enable anyone, be he ever so poor in this world's goods, to learn to qualify himself to enter into the company of the mighty dead.

The Port Arthur Shipbuilding Company has employed in its shops 1,400 hands, having a monthly payroll from $190,000 to $200,000. In that number there is such a fine aggregation of first-class mechanics that the group compares favorably with similar groups in any machine building plant in the world. The machines and the men behind them required to build marine reciprocating engines, are as capable of manufacturing paper machinery as they have proved themselves capable of producing these fine power units, which are a worthy sample of their past achievements.

The plant of the Port Arthur Shipbuilding Company is situated on a tract of 110 acres of ground inside the breakwater at Port Arthur, it has a water frontage of 3,030 feet with 1,250 feet of docks. The whole area is served throughout by traveling cranes and standard gauge railways.

The main office is a solid brick building, 42 feet x 66 feet, three stories high. There is a warehouse and storeroom of solid brick, steel trussed, 60 feet x 100 foot; a power house, also built of solid brick, steel trussed, 50 feet x 108 feet.

The great erecting shed is a frame steel trussed building 403 feet x 150 feet, with ample capacity to accommodate two wide, high speed "News" machines for erecting purposes.

The foundry is built of solid brick, steel trussed and has a floor 90 feet x 160 feet. This building, like all the others, is built on the solid rock and in it is blasted out a pit of ample width and depth to permit the casting of a large "Yankee" dryer 14 feet in diameter and 150 inches in face, or in it can be cast two dryer cylinders simultaneously, 60 inches diameter by 250 inches face.

The joiner shop, in which has been built all the woodwork for many a fine yacht and freighter, lends itself to the erection and building of flow boxes, cylinder vats, wet machines, etc. This joiner shop is built of solid brick, is two stories high and has a total floor area of over 10,000 square feet.

The boiler shop is a building of solid brick, steel trussed, 90 feet wide and 260 feet long. It is fully equipped with overhead cranes, hydraulic riveters, hydraulic presses, punches, shears, planers, rolls, etc., and in it have been built many large Scotch boilers. This shop can handle easily the largest digesters required in the pulp business or build with accuracy the tanks, incinerators, etc., required by the pulp and paper trade.

The pipe shop, which has often furnished all the piping for large modern freighters, including the intricate copper work required, is fully equipped not only with respect to tools, but also with the skilled personnel necessary to finish the brass and copper work required on a modern paper machine. This pipe shop is built of solid brick, steel trussed, 50 feet in width by 100 feet long.

The blacksmith shop, supplied with power hammers, with its efficient equipment of men and machines, forms the hammered steel gudgeons and makes the forgings required on the paper machine.

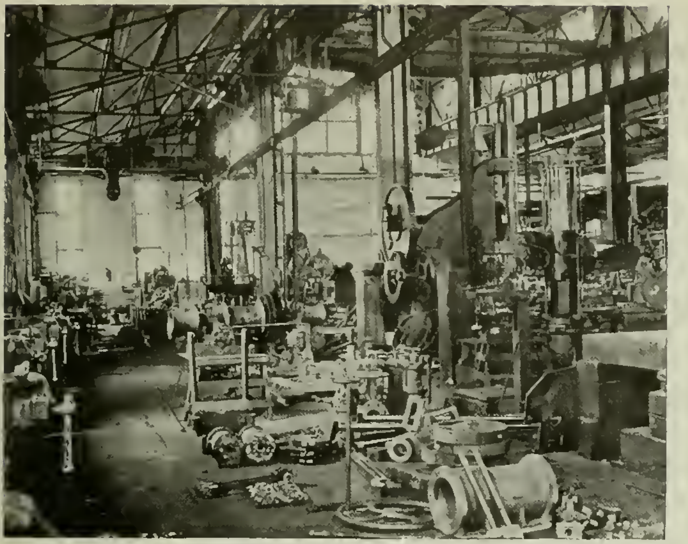
The machine shop, which is also a solid brick structure with steel trusses, is 90 feet wide and 180 feet long, supplied with overhead cranes and a full complement of modern tools and skilful mechanics. It is this shop that has assembled and finished not only triple expansion reciprocating marine engines up to 2,000 Horse Power, but also the winches, windlasses and steering engines required on a modern freighter; its success in building steam shovels and other specialties has resulted in many repeat orders.

It is most interesting to see skilled mechanics take the component parts of a modern paper machine, prepare them and assemble the entire unit on the erecting floor so that every precaution is taken to insure the paper machine manufacturing paper right from the start without the necessity of "tuning up" when the machine is erected in the paper mill.

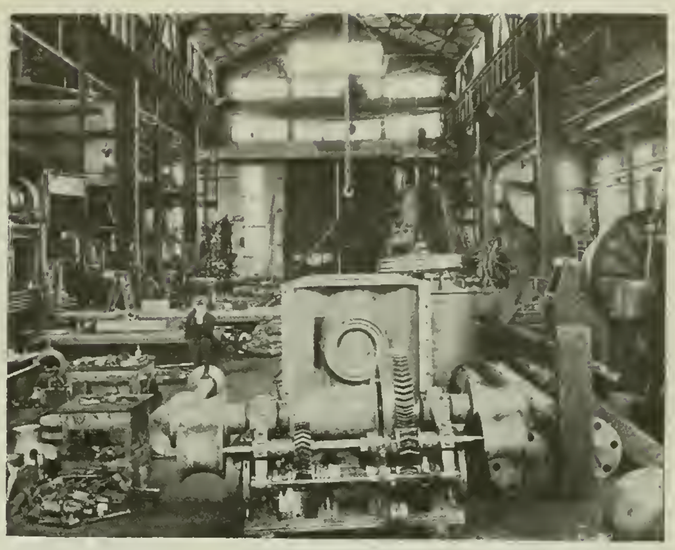
The pattern shop is built of solid concrete, is a two-story building 60 feet wide and 100 feet long, and in it pattern makers are busy making the numerous patterns required for the complete line of pulp and paper machinery, which the Port Arthur Shipbuilding Company offers to the Canadian pulp and paper mills. There are, in addition, the carpenter shop, paint shop, electric shop, air tool shop and other miscellaneous buildings, in all, twenty-seven.

The ground covered by buildings alone is 113,388 square feet, or 2.6 acres. The accompanying illustrations can only indicate the completeness of the equipment which the Port Arthur Shipbuilding Company is fortunate enough to possess, the existence of which is the primary reason for its entry into the field of manufacturing pulp and paper machinery.

It was not alone commercial advantage that caused this move, nor even was it solely because of the com-



NORTH WEST CORNER OF MACHINE SHOP.



MACHINE SHOP, LOOKING SOUTH.

mercial and sentimental reasons given in the beginning of this article. It was the feeling of responsibility on the part of the Port Arthur Shipbuilding Company that the hundreds of men in its employ, living in the neighborhood, should always have reason to feel secure of a means of earning a livelihood near their own homes; it is surely worth while to maintain such a splendid organization with its component units of worth while individuals; to take precautions that it should not disintegrate now that the great world war is over and the demand for ships has been reduced.

It is evident that this company could choose no better way of insuring not only its own future, but the future of its employees than by entering into the manufacture of the machines that are necessary to the great Canadian pulp and paper industry, which will undoubtedly be not only the greatest commercial enterprise in the Dominion, but very possibly, the greatest industry of its kind in the world.

In considering the advisability of building pulp and paper machinery, the Port Arthur Shipbuilding Company developed the fact that paper machine building is not as high a grade of the art of machine building as machine tool work, or reciprocating engine work, but really grades somewhere between these types and the rougher classes typified by agricultural machinery. The Port Arthur Shipbuilding Company concluded that there is no reason why any well appointed machine shop provided with the proper plans and specifications should not build as successful a paper machine as the oldest and best of those firms who have been engaged in paper machine building for generations. This conclusion has been confirmed by the success achieved by the Dominion Engineering Works in building the great news machines for the Laurentide Company. These machines are not only the first that the Dominion Engineering Works built, but in their manufacture they had the assistance of only one man familiar with the art of paper machine building. In this particular case old established precedents and methods of paper machine building were departed from and the result is that this machine probably represents the most advanced type of paper machine ever built being capable of a paper speed of at least 1,000 feet per minute and lending itself in its basic design to easy operation and facile change of clothing.

The necessity for a source of supply in Canada of paper makers' tools and the fact that Canadian pulp and paper mill owners would prefer to buy in Canada governed the wise decision to establish a pulp and paper machine building plant where it would form the necessary link in a complete industry. There is a national purpose in establishing a world leading trade in Canada, which appealed to the patriotism of the Port Arthur Shipbuilding Company.

The President of the Port Arthur Shipbuilding Company is Mr. James Whalen. There are few men who can boast the wide acquaintanceship that Mr. Whalen has in Canada and the United States. "Jim" Whalen, as he is universally called, is well known for his activities in the shipping and steel interests at Halifax and on the Atlantic Coast. His name is a familiar word in Montreal and Chicago, where he has financed the transactions that have given life to industries that are all through Canada from Halifax to the Pacific Coast, where the Whalen Pulp & Paper Mills are doing their share in swelling Canada's output.

The Secretary-Treasurer of the Port Arthur Shipbuilding Company is Mr. A. B. Conmee. Canadians will remember "Jim" Conmee, the famous northern Member of Parliament, whose foresight and broadness of vision gave birth to many plans for developing the Dominion; many of these plans are now being carried out by those who recognize the opportunity this country possesses to take her place as the leading world manufacturer of products made from her inexhaustible supply of raw material. Mr. A. B. Conmee follows in his father's footsteps in taking an active part in an undertaking based on the national use of the products of Canada's forests.

The Port Arthur Shipbuilding Company in its manufacture of pulp and paper machinery has acquired the services, as Chief Engineer, of Mr. John W. Brassington, whose long service in charge of design with the Pusey & Jones Company and whose practical experience as Chief Engineer and Manager of Manufacturing for the American Writing Paper Company of Holyoke, Massachusetts, qualify him to assist ably in the devel-

MR. JAMES WHALEN,
Presiden, Port Arthur Shipbuilding Company, Limited.

MA. A. B. CONMEE,
Secretary-Treasurer.

JOHN W. BRASSINGTON,
Chief Engineer, Pulp and Paper Machinery Manufacturing Dept.

opment of their pulp and paper machinery building department. Mr. Brassington is an Engineer, trained in England and has the advantage of many years active engineering practice in the United States.

Let us wish all success to this new Canadian enterprise, it gives Canadian Pulp and Paper Mill owners another source of supply in the Dominion and we believe this kind of initiative and ambition deserves not only success, but support by all those that desire prosperity here at home.

WALL BOARD FROM INFUSORIAL EARTH.

Mr. Ivan A. Bayley, of North Sydney, Nova Scotia, writes as follows: "After experimenting for some time on the utilization of tripolite or infusorial earth, I have succeeded in producing samples of a remarkably efficient wall board. The tripolite besides containing the necessary bonding material is mixed with considerable quantities of sawdust which has the effect of adding pliability to the sheets and rendering them more open so that nails may be driven quite near the edge without danger of splitting or spoiling the sheets and makes sawing easy. These sheets are remarkably light in weight and are fireproof and owing to the well known insulating properties of tripolite are great nonconductors of heat, cold or sound and are very strong. These sheets can be made into any convenient size and owing to the great strength of the binder used may be made as thin as one-quarter inch in thickness. As very large beds of tripolite or infusorial earth occur in Nova Scotia, Newfoundland and elsewhere in shallow lake bottoms and marshes, it thus becomes only necessary to drain off these areas and expose the beds to the natural summer drying when the tripolite can be piled in sheds and used as wanted. As both tripolite and sawdust are very cheap materials and the bond used being also very cheap, this process certainly seems to place a very valuable asset at the disposal of home builders. Further experiments are now under way with the object of producing sheets suitable for exterior work and roofing."

CATALOGS RECEIVED.

An important index of progress in any industry is available in the catalogs of companies manufacturing the machinery and developing the processes employed. New ideas and improved equipment are essential to progress and the firms who serve the pulp and paper industry are among the most progressive. The Pulp and Paper Magazine appreciates the receipt of new catalogs. Among those recently received are the following, which, of course, are available on request to anyone interested.

Jeffrey Standardized Scraper Conveyors is the title of catalog No. 257 of the Jeffrey Mfg. Co. Columbus, Ohio. It shows scraper conveyors handling pulpwood, straw, wood refuse, coal, ashes, etc. horizontally and at inclines up to 45°. Data for calculating sizes and capacities are given.

L. E. Knott Apparatus Co., Boston, Mass., have issued a catalog, 24-c, on laboratory equipment and supplies for Chemistry and Biology.

Noble & Wood Machine Co., Hoosick Falls, N.Y., have developed a paper pulping engine which is described in their catalog No. 76. Regular sizes are: 700, 1,000, 1,200, 1,500 and 2,000-lb. Cylinder washers, continuous beater attachments, etc. may be used.

Mason Regulator & Engineering Co., 145 Wellington St. W., Toronto, have sent out a condensed catalog of valves, regulators, traps, meters, gauges, pumps, etc.

It is a bit late to acknowledge the fine calendars of **Waterous Engine Works** and **National Aniline and Chemical Co.**, but they are very much appreciated.

PULP AND PAPER NEWS

At the annual dinner of the Foresters' Club of the University of Toronto the chief feature was an address by Edward Beck, of the Canadian Pulp and Paper Association, Montreal, on "What the Pulp and Paper Industry Means to Ontario" in which something of Ontario's pulpwood resources, their consumption and the means that were being taken to replenish the stocks were outlined by Mr. Beck, who also uttered a warning against the practice of exporting unmanufactured logs. The United States was confronted with the necessity of stopping the practise and Canada would have to follow in their footsteps. "We are just as tardy as they have been in coming to a realization of the limitations of our forest wealth, and to a knowledge that we cannot continue indefinitely slaughtering and wasting our forests without an intelligent effort at renewal and replacement unless we want to encounter ruin," said Mr. Beck.

Reporting to his Toronto office, P. P. Cowans, of McDougall & Cowans, Montreal, states that the Spanish River Company have got all the pulp they need. Last October they were short of water for a time, and had to go into the market to buy some pulp to supply their demands, but the thaw came and gave them all the water they required. According to Mr. Cowans the company is making more money today than any other company in Canada. It is one of the few companies that have not split up their shares.

The Shackleton Pulp and Lumber Company, Limited, has been granted an Ontario charter with power to engage in a general lumbering and pulpwood business and head office at Toronto. The company is capitalized at $50,000 and the provisional directors are A. L. Moffat, W. L. Bland, C. S. Middleton, J. J. Cooper and S. N. Schatz.

Capt. W. H. Maxwell, of Hamilton, Ont. has been engaged as First Pilot for the Laurentide Company Air Squadron at Grandmere, Que. and will assume his new duties in a short time. He takes the place of Lieut. Stuart Graham, who resigned the first of the year and accepted a position with Price Brothers.

An extra one per cent was declared on Provincial Paper stock in Toronto last week, along with the regular one and a half per cent. The extra is considered as a continuation of the policy of last year, when the distribution for the twelve months was 6, plus 2. The dividend on Provincial Paper common was increased from 4 to 6 per cent in October, 1919.

The T. S. Woolings Company, Limited, Englehart, are erecting a pulpwood rossing plant at Connaught, Ont. The plant will have a capacity of about forty cords per hour. The engineering firm of Sutcliffe & Neelands of New Liskeard, Ont. are doing the engineering work and will be in charge of construction. The plant will be equipped with an American barking drum.

The Toronto office of the Canadian Barking Drum Company report having sold one of their drums to the Three Rivers plant of the Three Rivers Pulp and Paper Company, Limited.

Among the officials of the Spanish River Pulp and Paper Mills, Limited, in Toronto last week for the meeting of shareholders in connection with the recent bond issue were: George H. Mead, president: P. B. Wilson, president of the Canadian Pulp and Paper Association: R. T. Houk, general sales manager of the George H. Mead Company, Dayton: Col. Jones, managing director of the Spanish River Company and assistant General Manager Irvine.

Sales Manager Bryant of the Brompton Pulp and Paper Company, Limited, was a business visitor to Toronto last week.

A. Huntley, of the Toronto office of the Hodge, Sheriff Company, selling agents for the Wayagamack Paper Company, spent last week at the Wayagamack mill.

Arthur Hobson, who has been connected with the Toronto office of the Howard Smith Company for some time, has gone to Winnipeg as western representative of the company. Mr. Hobson, who was formerly with the Toronto Paper Company, is an overseas service man and has been popular in the paper trade in Toronto.

An excellent exposition of the forestry problems of Canada was given by Robson Black, secretary of the Canadian Forestry Association, at a meeting of the Empire Club at the King Edward Hotel, Toronto, last week, who declared that before the term "forest conservation" could become much more than an amiable password we must elevate the forest resources into the very front rank of public policies and take on the job associated with their management as a first concern in our national economy.

PULP EXPORTS FROM CAMPBELLTON DISTRICT.

Mr. G. C. Woodward, American Consul at Campbellton, N.B., has kindly sent the following report to the Pulp and Paper Magazine.

Exports of Wood and Products in the United States from Campbellton, New Brunswick, Consular District.

Article.	Qty.	Quantities.	Values.	Quantities.	Values.
Wood & Products:		1919.		1920.	
Lath	M	134,142	401,842	36,137	320,425
Lumber.	M	92,929	1,447,857	48,384	1,940,726
Miscellaneous	—	8,715	5,585	......	....
Pulp	Tons	26,560	2,073,769	35,889	4,270,537
Pulpwood .	Cds.	26,333	366,235	39,972	777,831
Shingles	M	111,404	468,327	49,572	314,647
Ties	Pcs.	175,498	74,723	141,183	137,655
Total Wood and Products.			$4,939,338		$7,761,821

(Note)—Campbellton Consular District comprises the counties of Restigouche and Gloucester, New Brunswick and Bonaventure and Gaspe, Quebec.

Handing jumbo rolls may cause strained backs and dislocated limbs. If the roll is big do not attempt to lift it alone. You can always get help.

Technical Section

CANADIAN PATENTS RELATING TO PULP AND PAPER MAKING.

B-0. Wood preservative. Can. patent No. 198,670, J. A. DECEW, Montreal, March 30, 1920. Claims allowed 5. Same as U. S. patent No. 1,283,104. See Pulp & Paper, 18, 527, Q-0, May 13, 1920.—A.P.-C.

B-0. Wood preservation. Can. patent No. 198,671, J. A. DECEW, Montreal, March 30, 1920. Claims allowed 3. Same as U. S. patent No. 1,283,105.—A.P.-C.

B-0. Preparation of wood for preservation. Can. patent No. 198,627, JOS. A. CODERRE and WM. G. KYNOCH, Montreal, March 30, 1920. Incisions are made by pushing the fibers of the wood aside to form relatively long slits, each slit having its max. depth in the center thereof, which gradually decreases towards the opp. ends of the slits, and the slits all being of the same depth. Claims allowed 6—A.P.-C.

B-4. Oleo-resin collection. Can. patent No. 197,704, S. E. OLIVER, B.C., Canada, March 2, 1920. A means of obtaining oleo-resin from growing trees which consists in boring a relatively small auger hole into the trunk of the tree at a slight upward incline from the horizontal, and means for directly connecting a suitable container to the lower end of the auger hole an air-tight connection. Claims allowed 5.—A.P.-C.

B-5. Log loader and decker. Can. patent No. 198,038, WM. L. SMITH, Ontonagon, Mich., U.S.A., March 9, 1920. Claims allowed 5. A.P.-C.

B-5. Tree felling apparatus. Can. patent No. 198,719, A. O. M. LEFGREN, Stockholm, Sweden, March 30, 1920. Claims allowed 5.—A.P.-C.

B-5. Timber tongs. Can. patent No. 198,869, JAS. J. VERRETTE and ALEX. WHITE, Odanah, Wis., U.S. A., April 6, 1920. Tongs embodying a curved yoke having a central angular aperture, jaws pivoted to the ends of the yoke and having portions extending at an angle within the yoke, a stem of angular cross section sliding through said aperture and having a head within the yoke curved to fit the yoke, said head having a slot and transverse pins extending through the slot, and said portions of the jaws extending within said slot and having slots engaging said pins. Claim allowed 1.—A.P.-C.

C-6. Sawing carriage. Can. patent No. 198,702, P. J. HILL, Chatham, N.Y., U.S.A., March 30, 1920. Claims allowed 7.—A.P.-C.

C-7 Barking machine. Can. patent No. 198,701, G. HELSTROM, London, England, March 30, 1920. Claims allowed 12.—A.P.C.

C.-7. Decorticating machine. Can. patent No. 197,872, R. S. MADDOCK, Swampscott, H. L. BROWN, Haverhill, and C. G. SHERMAN, Worcester, Mass., U.S.A., Mar. 9, 1920. The machine consists essentially of a rotable drum having a relatively resilient or fielding surface, rollers positioned to impinge against this surface, spring means whereby the rollers may be yieldably held in impingement against the drum so that the material being treated may be subjected to predetermined press., and pneumatic means for removing waste matter. Claims allowed 13.—A.P.-C.

C-7. Barking drum. Can. patent No. 198,571, International Paper Co., Assignee of E. HUTCHINS, New York City, N.Y., U.S.A., March 23, 1920. Claims allowed 20.—A.P.C.

C-7. Barking drum. Can. patent No. 198,572, International Paper Co., Assignee of A. H. WHITE, Brooklyn, N.Y., U.S.A., March 23, 1920. The patent covers a device for continuously feeding the wood to be barked into the receiving end of the drum, and means for maintaining in the drum a substantial level of water and flowing the same continuously through the drum from its receiving to its discharge end to cause the wood to be continuously discharged from the discharge end of the drum. Claim allowed 1.—A.P.-C.

D.-4. Automatic grinder stone dresser. Can. patent No. 198,748, F. E. RILEY, Livermore Falls, Me., U.S.A., March 30, 1920. Claims allowed 14.—A.P.-C.

D-0. Apparatus for producing fiber plants. Can. patent No. 198,754, GEO. WM. SCHLICHTEN, San. Diego, Cal., U.S.A., March 30, 1920. An appa. for crushing, denting, splitting, spreading, breaking, and finally cleaning, combing, and degumming the fiber bearing material. Claims allowed 6.—A.P.-C.

E-2; F-2. Method of refining raw woodpulp liquor. Can. patent No. 202,602, PAUL HEIN, Essen, Ruttenscheid, Germany, Aug. 3, 1920. A method of refining raw woodpulp liquor by means of fuel ashes. Claim allowed 1. Same as U.S. patent No. 1,344,691. Paper, 19, Sept. 1, 1920.—A.P.-C.

E-2. Reduction of sulfite waste liquors. Can. patent No. 202,947, V. DREWSEN, New York City, Aug. 17, 1920. Claims allowed 11. Same as U.S. patent No. 1,298,477, Chimie & Industrie, **4**, 233, (Aug. 1920).—A.P.-C.

E-5. Production of sulfite pulp. Can. patent No. 203, 184, C. BACHE-WIIG, Portland, Me., U.S.A., Aug. 24, 1920. The method consists in cooking small pieces of wood in a $CaH_2(SO_3)_2$ liquor and in injecting a very small quantity, say less than 5% of NaCl during the cooking operation. Claims allowed 3.—A.P.-C.

F-2. Reduction of waste liquors from soda pulp processes. Can. patent No. 202,945, V. DREWSEN, New York City, Aug. 17, 1920. Claims allowed 17. Same as Fr. patent No. 495,047. See Chimie & Industrie, **3**, 654, (May, 1920).—A.P.-C.

F-2. Causticized ligneous acetate material from waste pulp liquors. Can. patent No. 202,946, V. DREWSEN, New York City, Aug. 17, 1920. The process of treating the waste liquor produced in the manuf. of woodpulp to form therefrom acetate material adapted for the production of acetone and other allied volatile solvent material by dry distg. with steam which comprises concg. the waste liquor and incorporating and combining therewith additional NaOH to the extent of more than 20% of the org. matter present to produce concd. causticized material, and incorporating and combining therewith CaO and eliminating water therefrom to produce substantially dry calcareous ligneous acetate material which is permanently solid under dry distg. conditions. Claims allowed 25.—A.P.-C.

G-5. Slime pulp thickener and density indicator. Can. patent No. 198,157, CHAS. ALLEN, El Paso, Texas, U.S.A., March 16, 1920. The thickener consists of a settling tank having a valve controlled orifice for the discharge of thickened material, a valve operating member within the tank in the region where the thickened material accumulates which is of such a wt. and shape as to sink in unthickened material and retain the valve closed and to rise in thickness material of the desired density to open the valve and allow the thickened material to be discharged. The wt. or resistance of upward movement of the valve operating member can be varied so as to vary the density of the discharged material. 'An indicator is operatively connected to the control means of the valve to indicate the density of the discharged material and so that discharge will occur only when a pre-determined density is reached. Claims allowed 11.—A.P.-C.

H-4. Electrolytic caustic soda cell. Can. patent No. 198,568, Industrial Chemical Co., New York City, Assignee of N. STATHAM, Hastings-on-Hudson, N.Y. U.S.A., March 23, 1920. Claims allowed 24.

K-11. Paper screen. Can. patent No. 203,120, Sherbrooke Machinery Co. Ltd., Sherbrooke, P.Q., Assignee of ANTON J. HAUG, Nashua, N.H., U.S.A., Aug. 17, 1920. As a new article of manuf., a segmental section for a cylindrical screen frame having a plurality of longitudinal supporting arc-shaped ribs of equal length, but circumferentially offset. Claims allowed 17.—A.P.-C.

K-11. Electrical dryer for paper. Can. patent No. 198,642, WM. CHAS. BALDWIN, Ottawa, March 30, 1920. The paper is dried between a pair of endless belts adapted to contact with opp. sides of the paper and electrically heated. Claims allowed 2.—A.P.-C.

K-11. Suction box for paper machine. Can. patent No. 198,391, JAS. E. McLAUGHLIN and J. O. HAMEL, Grand' Mere, Que., March 23, 1920. Claims allowed 8. —A.P.-C.

K-12. Papermaking machine. Can. patent No. 202,881, CHAS. E. POPE, Springfield, Mass., U.S.A., Aug. 10, 1920. In a paper-making machine, the combination with the paper-making wire, and the suction-boxes, of an endless wire-protecting felt interposed between the suction boxes and wire, means to support and drive the felt at the same speed as the wire, and means to clear the felt of paper fibers comprising means to direct a stream of water through the felt during its return traverse and a suction box cooperating with said directing means to remove the water from the felt previous to its outward traverse. Claims allowed 18.—A.P.-C.

K-14. Spacing device for roll paper cutters. Can. patent No. 198,657, B. CARLISLE, Santa Anna, Cal., U.S.A., March 30, 1920. Claim allowed 1.—A.P.-C.

K-14. Guard for calender machines. Can. patent No. 202,584, MIKE TELESZKY, Jenners, Pa. U.S.A., Aug. 3, 1920. Claims allowed 2.—A.P.-C.

K-18. Composite board. Can. patent No. 198,812, Cedaroid Co. Inc. Assignee of P. J. NAGLE, Rochester, N.Y., U.S.A., March 30, 1920. A board formed of a plurality of sheets each separately satd. with a compd. containing cedar oil, sugar and licorice, and united by an adhesive contg. cedar oil, sugar and licorice. Claims allowed 2.—A.P.-C.

K-18. Process of impregnating or saturating strawboard. Can. patent No. 197,589, A. E. SHIRLOW, Assignee to J. C. GATES, Melbourne, Victoria, Australia, Feb. 24, 1920. The articles are immersed for 30 sec. in a wax soln. at 190-210°F. Claims allowed 3.—A.P.-C.

K-18. Apparatus for automatically impregnating and saturating strawboard. Can. patent No. 197,590. A. E. SHIRLOW, Assignor to J. C. GATES, Melbourne, Victoria, Australia, Feb. 24, 1920. App. for impregnating strawboard containers according to Can. patent No. 197,589. Claims allowed 7.—A.P.-C.

K-0. Process of and means for neutralizing electric charges on fibrous materials. Can. patent No. 202,864, The Siemen and Halske, A. G., Assignee of PAUL RASEBURN, Halensee, and GUSTAV GROSSMANN, Charlottenburg, Germany, Aug. 10, 1920. In combination with a machine for working fibrous material, a source of ionizing rays for neutralizing the elec. charges of fibrous material when passing through said machine, and a grounded electrode for collecting the elec. charges from said fibrous material, the source of rays being applied to the electrode in the form of a coating and placed between the fibrous material and the electrode, which latter surrounds the fibrous material. The source of rays consists of a coating of radioactive substances. Claims allowed 4.—A.P.-C.

M.-9. Conveyor for pulp articles. Can. patent No. 196,938, The Keyes Fiber Co., Waterville, Me., Assignee of F. W. WATERMAN, West Philadelphia, Pa., Feb. 3, 1920. Claims allowed 7.—A.P.-C.

M-O. Instrument for indicating and recording the flow of liquids. Can. patent No. 196,617, J. J. LASSEN, London, W. C., and J. L. GILBERT, Kew, Middlesex, Jan. 27, 1920. Claims allowed 5.—A.P.-C.

K-18. Fireproof fiber board. Can. patent No. 203,803, BROR G. DAHLBERG, St. Paul, Minn., Assignee of T. B. MUNROE, Forest Glen, Maryland, U.S.A., Sept. 7, 1920. The herein described new art. of manuf. consisting of a body of fibrous material impregnated with a complex compd. of ZnO and NH_3 associated with another fire-resisting compd. formed from the reaction between NH_4OH and a neutralizing agent. Claims allowed 5.—A.P.-C.

K-18. Plaster board of fibrous material. Can. patent No. 204,796, B. G. DAHLBERG, St. Paul, Minn., assignee of T. B. MUNROE, Forest Glen, Maryland, U.S.A., Oct. 12, 1920. In a plaster board, a body portion comprising silver-like fibers to give porosity thereto, long hair-like fibers to act as binder, and very short fibers to act as a filler, said body portion provided with undercut recesses in its surface adapted to hold plaster, and with a coating of water-proof material on its outer surface and in said recesses, which does not penetrate the porous fibrous mass to a substantial extent said body portion being further provided with a layer of plastic material overlying the waterproof coating and entering the recesses. Claims allowed 2.—A.P.C.

K-23. Reinforced paper. Can. patent No. 203,806, EDWARD H. ANGLER, Framingham, Assignee of LAWRENCE G. MILLER, Cambridge, Mass., U.S.A., Sept. 7, 1920. A method of prepg. transversely reinforced paper which comprises the following steps: coating a sheet with adhesive, inserting reinforcing strands in the adhesive coating, superposing a second sheet on the adhesive with edges offset from those of the first sheet and uniting lengths of the laminated material so made by securing together marginal portions provided by the offset edges in a splice joint whereby to provide a web of uniform thickness. Claims allowed 11.—A.P.-C.

Canadian paper equals any imported product and can be bought for less money.

UNITED STATES NOTES

Sixty men in the sulphite department of the Great Northern Paper Company, Madison, Maine, have been laid off indefinitely. More were laid off last week, but part of the force that has been dropped was employed in departments outside the sulphite division. No reductions have been necessary thus far in the paper making and ground wood sections.

The contemplated wage cuts in the plants of the American Writing Paper Company, mention of which was made in last week's Pulp and Paper Magazine, were put in effect last Monday. The reduction finally decided upon amount to between 10 and 18 per cent. Several thousand employees in the Holyoke mills are affected.

The National Pulpwood Corporation of Rutland, Vt., has filed articles of incorporation with the Secretary of State at Rutland. The new company's capitalization is put at $200,000, divided into 2,000 shares. The persons named as incorporators are: Perley R. Eaton, Grace J. Eaton and Mary V. Quigley, all of Rutland, and Edward P. Cleary, of Sillery, Province of Quebec.

A "forest of States" has been planned for Exposition Park, Los Angeles, Cal., by the Los Angeles Chamber of Commerce. It is hoped to obtain from every State in the Union, as well as from Hawaii, Porto Rico, Guam, the Philippines and Alaska a tree representative of the district from which it comes. These trees will be planted and cared for by the Los Angeles Municipal Park Commission. The Governor of each State is to be asked to send a tree typical of his State. Idaho and Louisiana have already responded, the former having sent a white pine, and the latter a magnolia.

The New England Paper and Pulp Traffic Association has taken a firm stand against the proposed adjustment of rates on "all rail" coal from the mines to points in New England. In a protest voiced through C. H. Tiffany, traffic manager of the organization, the revised charges are termed "incomplete, inopportune, unscientific and unsatisfactory." Mr. Tiffany contends that the industries on the Maine Central Railroad will be hurt if the proposed advance in rates is imposed and that their application will result also in a loss of business to the Boston and Maine R.R., if not to the New Haven and the Boston and Albany lines. It is claimed by the New England paper men that the rates, which they assert have been on a wrong basis since 1913, are at the uttermost peak right now and that any further advance would be extortionate. The New England Pulp and Paper Traffic Association represents thirty pulp and paper concerns, operating fifty large mills and other plants, using more than 1,000,000 tons of steam coal annually. Other New England business men, official representatives of the municipal governments of several cities, chambers of commerce and other organizations have joined the paper men in their opposition.

The Crown Willamette Paper Company, Portland, Ore., lost the services on March 1 of B. T. McBain, one of the pioneer workers in the paper field on the Pacific Coast. Mr. McBain, who was mill manager of the company's Oregon City mills and whose connection with newsprint and wrapping paper manufacture on the Coast dates back to 1893, will devote himself in future to the banking business. He intends organizing a banking house, among the stockholders of which will be many of his old associates in the mills, and he expects not only to handle part of the business of his old employers, but to be the banker for a majority of the Crown Willamette employees as well.

A fire, the origin of which remains a mystery, last week gutted the storage plant and office building of the Judd Paper Company in Holyoke, Mass. The damage is estimated at upwards of $150,000. John K. Judd, president of the concern, despite the serious setback, has let it be known that the slogan of the firm is "business as usual" and to that end the company officials have leased quarters in the American Braiding Company building and have sent out announcements stating that orders will be filled as usual, subject to slight delay.

Fruit growers in Michigan and adjacent horticultural States who have been finding it increasingly difficult to obtain adequate supplies of berry boxes and peach, pear and plum boxes, may find a solution of their problem in the plan of the Eddy Paper Company, Kalamazoo, by which it is proposed to use paper board in place of wood fibre in the manufacture of these containers. According to an announcement of Charles E. Nelson, general manager and secretary of the Eddy company, experiments along this line have been so entirely successful that the concern has completed necessary preparations soon to begin making all types of fruit containers, ranging from the ordinary quart berry box to a half-bushel measure, suitable for peaches, pears, plums, etc. The larger board measures will be equipped with handles, quite as easy and convenient to handle as the ordinary market basket. "It will not be until well into April, possibly May, before we are able to begin in the manufacture of fruit packages on an extensive scale," says Mr. Nelson's statement. "We are now running three shifts a day to fill the orders for our shipping containers and we must keep up with our orders in that line. The prospects are that the new fruit package department will require at the outset the entire product of a board machine and will increase the number of employees on our payroll from 400 to 600." The establishment of the new department will make it necessary to install a considerable amount of specially designed and built machinery and equipment.

The Black River Paper and Manufacturing Company, Waterton, N.Y. which a year ago was merged with the C. A. Mack Paper Company, has just acquired through purchase the M. M. Bagg Paper and Supply Company, also of Waterton. This means that another combine will be effected in the near future, making the Black River Company the largest wholesale paper mill supply concern in Northern New York. Allen Perkins will be in charge of the reorganized company.

Farmers burned up 68,244,000 cords of wood valued at $345,866,000, for fuel last year. Department of Agricultural figures disclose the average was 10.6 cords per farm.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, March 12.—While the mills are not by any means running at full capacity, it can be stated that some lines of paper show a distinct improvement in respect to turn-over and jobbers of light weight papers, particularly, have been cheered by a marked improvement in trade during the past week or ten days. Considerably larger sales of tissues and toilets are being made at the present time and the outlook has brightened considerably. This condition, however, does not exist in the same degree in finer papers and, despite price reductions this week in books, bonds and ledgers, no large volume of business is being transacted. It has been noticeable that falling prices have had little effect in stimulating business and it was hardly expected that they would. The downward revision of price lists in various lines of paper are not being made in the expectation that they will increase sales, but it has become necessary, in view of conditions across the line where lessened demand is causing paper manufacturers and jobbers to look to Canada for a market, although no great amount of paper has been shipped into the country as yet and serious competition is not anticipated.

BOOKS, BONDS AND LEDGERS.—Further recessions in these lines went into effect this week, the reductions averaging ten per cent. The jobbers' price for No. 1 S. C. book is now 19½c. in small lots; No. 2, 18c and No. 3, 16½c. M. F. book is 16c and bonds are from 21c a pound up according to grade. Most dealers and manufacturers would like to say that these prices are on rock bottom but such is the condition of the trade that no one knows what further recessions might take place. It is generally believed that prices will go still lower before the trade becomes stabilized. Mills are none too busy on the finer papers and the jobbers are finding it a difficult matter to reduce their stocks. In some cases the loss through the falling market and the receipt of belated orders from the mills will be considerable. In fact practically all the jobbers stand to lose considerable money through the turn the paper market has taken but they are accepting the situation philosophically for the most part and are hoping for a come-back of the market to something of its old status.

WRAPPING PAPERS.—The recent drop in the prices of wrapping papers did not have the effect of stimulating business and trade is still extremely dull. There has been no increase either in sales or enquiries and what business is coming through is of small dimensions. If it does not increase sales, the reduction in wrapping papers is likely to shut off United States competition which was one of the objects of the cut. Stocks are still rather heavy in the warehouses and jobbers are conservative in buying from the mills.

GLASSINE AND GREASEPROOF.—Trade in these lines has been extremely dull during the past week with very few transactions. While there has been practically no buying from American firms, many tempting quotations have been received from across the lines, but the buying era has not yet set in and what business there is going is domestic and small in bulk. That stocks of consumers are low is indicated by the fact that buyers' orders are very small and most of the buyers want the goods quickly. Glassine is quoted at 25c for bleached and 22c for unbleached while greaseproof is selling at 20c a pound for bleached and 18c for unbleached.

PULP.—The pulp situation remains unchanged with the mills running light and the transactions few and far between. Very few sales are being made and what deals that are being put through are at prices that do not represent any stable market price. As a matter of fact there is no market price for either chemical or mechanical pulp and sales are made on the basis of what the commodity will bring, in the absence of any real market.

TISSUES AND TOILETS.—Manufacturers in these lines report some improvement in trade. More orders are coming in and they are larger in bulk. Not only is this the case but orders that have been a little late in being delivered have been increased in size from the original and the general indication is that the jobbers and consumers are getting into a position where they can use more light weight papers than heretofore since the slump set in. Manufacturers are cheered at the prospect and report that the trade is gradually coming back. Prices have been unchanged since the recent reductions.

RAG AND PAPER STOCKS.—The entire lack of consuming demand for new cotton cuttings has finally ended in a general and rather steep down trend. There are few dealers who are willing to purchase when paper manufacturers are running at reduced schedule, or else closed down, unless they can get the stock at low enough figures to ensure against the present falling market.

There being no resumption or increase of operations at mills using old rags., this condition makes it as near a standstill as can be. The result is that as far as quotations are concerned it is almost impossible to get definite figures as the amount of business going on between dealers has been very low. The very slight call for waste paper during the past two weeks has created a situation which is a very severe one both for paper mills and waste paper dealers. Dealers report very few orders on hand, and mills advise that they have very little business on their books for delivery in the immediate future. The mills seem to be waiting for improvement in the demand for their products, and refuse to show interest in purchasing raw material until the demand improves. Most grades have slumped off badly since last report and quotations given are very nominal.

	Per Cwt. F.O.B. Toronto.	
No. shirt cuttings	$11.00—	$12.00
No. 1 unbleached cotton cuttings	7.50—	8.00
No. 1 fancy shirt cuttings	7.00—	7.50
No. 1 blue overall cuttings	7.00—	7.50
Bleached shoe clip	9.00—	9.50
White cotton hosiery cuttings	12.00—	12.50
Light colored hosiery cuttings	10.50—	11.00
New light flannellette cuttings	8.50—	9.00
No. 2 white shirt cuttings	6.50—	7.00
City thirds and blues (repacked)	1.40—	1.60
Flocks and satinettes	.75—	.85
Tailor rags	.60—	.70
Gunny bagging	.90—	1.00
Manila rope	3.00—	3.25
No. 1 white envelope cuttings	4.00—	4.25

No. 1 soft white shavings	3.75—	4.00
White blanks	1.75—	2.00
Heavy ledger stock	3.00—	3.25
No. 1 magazine	1.65—	1.85
No. 1 book stock	1.25—	1.45
No. 1 manila cuttings	1.75—	2.00
No. 1 print manila	.75—	.85
Folded news	.70—	.80
Over issue, news	1.00—	1.15
Kraft	1.75—	2.00
No. clean and mixed papers	.40—	.50

NEW YORK MARKETS.

New York, March 12.—(Special Correspondence).—No appreciable improvement can be reported in the paper market. Here and there reports tell of a little livelier demand for some grade of paper, but on the whole the market continues in a dull condition with the aggregate movement of supplies into consuming channels far below the volume that it ordinarily is. Buyers are still operating in hand-to-mouth fashion, limiting orders to paper directly required, and flatly refusing to anticipate future wants. Moreover, the average consumer is not using as much paper today as ordinarily, this condition being an outcome of the dullness of business generally.

Such changes in prices as are developing are, almost without exception, in a downward direction. Mills are repeatedly announcing additional reductions, presumably in the hope of stimulating demand and also as a result of the gradual decline in manufacturing costs. In keeping with the situation in various other industries, wages of paper mill workers are being reduced. The American Writing Paper Company will cut wages 10 to 18 per cent, commencing next Monday, and various other companies are effecting about the same percentage of reductions. Mills in the Middle West are understood to have readjusted wages, and it is said that the situation there has began to improve because of manufacturers being enabled to offer paper at prices which are proving attractive to at least some buyers and causing them to increase their purchasing operations.

The newsprint market, insofar as regards the spot market, displays a decidedly easy undertone. Demand for spot deliveries is dull because of the fact that most publishers find their present requirements amply covered by contract supplies. About the only demand of worthwhile proportions for spot newsprint comes from those consumers who rely on open market purchases to cover their wants and who do not enter into contract obligations. Obviously, this class of consumers are those who use but limited tonnages of paper, with the result that in the aggregate but a slight demand prevails for spot shipments. It is questionable at just how low newsprint can be bought in the open market. There are some supplies in weak hands, and these are being offered out at low prices. Reports have been heard of some lots of news in standard rolls being available at 4.50 cents per pound at producing mills or ex warehouse, and talk of even cheaper prices has been heard. The spot basis nevertheless is still near to 5 cents a pound, most of the representative mills naming that figure, or slightly lower, which, it must be said, is sufficiently low to more or less unsettle the contract situation. There are many rumors floating around relative to further reductions in the contract basis by leading manufacturers, but nothing definite or official has been announced and contract quotations continue to range between 5 and 5.70 cents f.o.b. producing mills for second quarter delivery.

There are no important changes reported in book papers. Demand is narrow and most book mills are running on short schedule but quotations are about at last-reported levels. The coarse paper trade is dull. There is the routine demand of course, but no concerted buying is being done except by those consumers using small quantities of such paper. No. 1 domestic kraft is quotable at around 8 cents per pound at mills, and No. 1 white tissue at an average of $1.75 per ream.

Fine papers are moving in limited amounts. A little better demand is reported for certain of the cheaper-priced lines of writing papers but mills in the New England district are not beginning to secure enough business to keep them occupied. A paper merchant who made a trip through the fine paper mills this week reported that from his observations he would judge that the average paper plant in the section around Holyoke and Springfield, Mass., was not operating at more than three days a week, and he added that some mills were closed down altogether temporarily.

The board market is more or less demoralized. Demand is at a low ebb and prices appear to be dropping continuously. Composition among manufacturers to get business in order to keep running is bringing prices down to unwarranted levels and most of the board being marketed at present is sold at a loss to the manufacturer. Offerings of plain chip board at $30 per ton f.o.b. mills are quite numerous, and there have been at least some sales at $27.50, while filled news board is quoted at between $32.50 and $35 at mills.

GROUND WOOD.—The mechanical wood pulp market is devoid of important trade activity. Occasional sales are reported at a low price basis but dealers and mill agents are unanimous in their assertion that little or no concerted buying is being done by consumers, who evidently have present requirements covered by stocks on hand and contract shipments and who are declining to place orders ahead. It is difficult to say just what constitutes the market value of ground wood today. Such transactions as are being recorded are invariably at about $45 per ton or less at grinding mills, yet some of the largest producers are said to be holding for $60 and higher. It would appear therefore that quotations range from $40 to $65 per ton, with buyers acquiring such amounts as they immediately need at close to the low edge of this quotational range.

CHEMICAL PULP.—Both buyers and sellers of chemical wood pulp are pursuing a waiting policy at present. Buyers are evidently not in want of fresh supplies and are keeping out of the market excepting for the occasional placing of an order, and sellers presumably appleciate that endeavour to persuade consumers to absorb pulp under prevailing conditions is merely a waste of effort and are holding back in trying to effect the movement of stocks. Prices on all grades of pulp are unsettled but are undergoing little broad change. There is a feeling among traders that approximate value levels will rest at around current prices until at least the spring, and producing mills with few exceptions are not altering their contract basis. Neither are importers cutting prices any further because the cost of pulp at primary points does not permit them to.

RAGS.—There is but a slight demand for paper-

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making rags. Consumers in a majority of cases are out of the market entirely as buyers, while those few that are buying are absorbing merely small lots needed to fill in actual wants. Chief activity in the trade revolves around roofing stock. Felt mills are buying this class of rags here and there wherever they can obtain them at the prices considered as approximate market levels, which means about a cent per pound or a trifle higher at shipping points for No. 1 packing. Old white rags have eased off within the week, and sales of No. 1 repacked have been recorded at 7.50 cents a pound at dealers' points, and of No. 2 repacked whites at 4 to 4.25 cents. Thirds and blues are little wanted by mills and the approximate quotable basis on repacked thirds is 2.50 cents. New cuttings continue weak and are mainly neglected by buyers. Prices are gradually sagging although no sharp recessions have occurred this week.

PAPER STOCK.—Paper and board mills are doing little buying of old paper. Some orders of course are being placed, but the current movement into consuming channels is of smaller volume than in the recollection of some of the oldest members of the New York trade, and there are no indications of any material improvement in demand in sight. Low grades already are at price levels where there is practically no profit for collectors or packers, which is the only apparent reason that values are not going further down, while high grades are slowly but steadily seeking lower levels. Sales of No. 1 hard white shavings at 4 cents per pound at shipping point and of No. 1 soft white shavings at 3 cents have been noted, and these prices are about the highest offered by mills now, with some reporting purchases at slightly less. Old books and magazines are off further to about 1.25 cents a pound for No. 1 heavy book stock at shipping points, and white blank news cuttings have sold to mills at 1.75 cents f.o.b. dealers' points. Folded newspapers are quoted at 55 to 60 cents per hundred pounds and No. 1 mixed papers at about 40 cents.

OLD ROPE AND BAGGING.—Some business is passing in old manila rope at a price basis of between 3.75 and 4 cents per pound for No. 1 rope at shipping points. There is also a limited call for mixed rope and strings with mill buyers paying close to 1.25 cents net to shippers. Old bagging is not wanted by consumers and prices are altogether nominal.

I'm awfully tired of kicking,
  All I want's a little peace:
But the wheel that does the squeaking
  Is the one that gets the grease.

News From Our Advertisers

The Mount Royal Metal Co., 31 St. Nicholas Street, Montreal have just issued a new booklet on Durite Metal. They claim that Durite is the result of an exhaustive scientific research with a view to producing a fine uniform grain. Such fine grain would be evident in the fracture of the metal and this is shown in the illustration herewith.

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OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XVIX. GARDENVALE, P. Que., March 24th, 1921. No. 12

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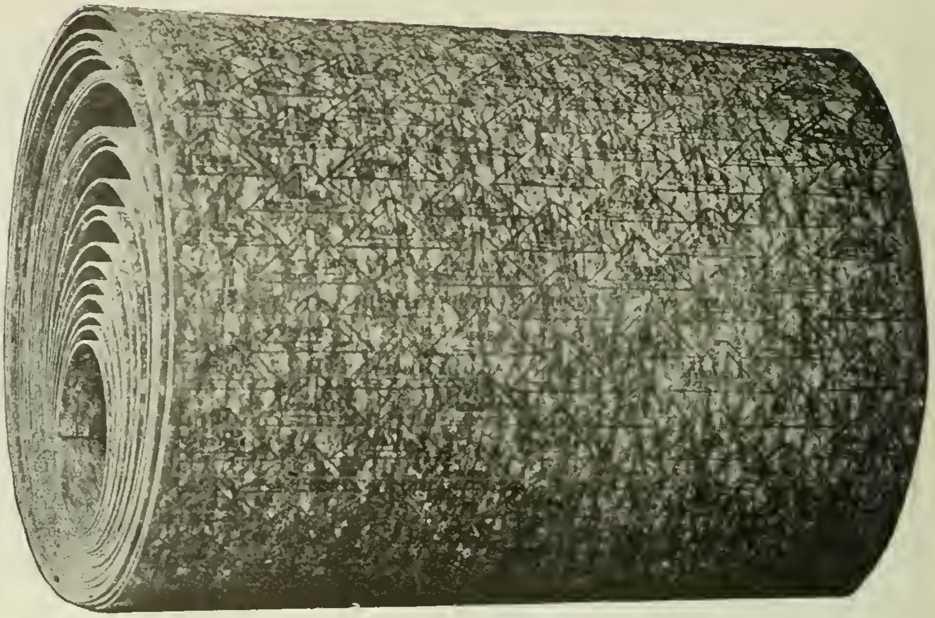

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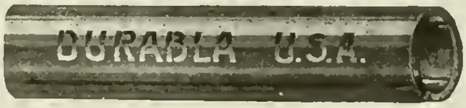

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EDITORIAL

ALASKA'S PAPER MILL.

Perhaps some pulp and paper men have looked with a bit of apprehension on the announcement that the first paper mill in Alaska is now producing pulp. To be sure, the initial output is only twenty tons per day, but the potential capacity of Alaska's forests makes it easy to imagine a very considerable development of this industry in America's most northern territory. There are of course, geographical, industrial and social difficulties to be overcome but it is generally noticed that what the public wants it gets. The people of the United States must have lumber to build houses and they are equally insistent upon having the daily newspaper and the wrapped package. The exploitation of the forests of Alaska is therefor an absolute certainty. The forests of the eastern United States have practically gone, the great long leaf pine forests of the south will soon be insufficient for even local requirements, the hardwood belt is already slipping from its ability to supply the demand, and the forests of the Rocky Mountains and Pacific Coast regions are already fairly well opened up —and burned up, we might add—so the Alaskan timber is the last stand for the American industries depending upon the forest for raw material.

Canadians have been inclined to look upon British Columbia with about the same ideas of a limitless timber supply which they used to attach to the forests of eastern Canada but the fallacy of such a notion has been pretty well impressed of late upon the public as regards the east and a suspicion that conditions are not any too satisfactory in the west has been gradually growing. Careful observers like Judson Clark, Roland Craig and others are now courageously putting the facts before the people. There may be a tendency on the part of some timber owners to gloss over or to discount the statements made regarding the shortage of timber in the Pacific province because of the fear that stock prices might possibly suffer. It is our opinion that it is much better for the public to know the truth of the matter even at the expense of a few points on the stock market than that the next generation of Canadians should be almost absolutely without timber. As a matter of fact we believe that a true appreciation of actual conditions will have such an effect on timber operators that they will immediately put into force methods of lumbering that will ensure the continuity of their forests and consequently the stability of their investments.

So instead of apprehension for the dominance of our pulp industry over the new Alaska developments, we should really look with satisfaction and gratitude on any move which will relieve what will soon be an enormous strain on our own available timber resources. While this development is going on, and it is beginning at a very fortunate time, let us be preparing for the inevitable crisis by better protection, better operation, greater reforestation and, eventually, continuous production.

MAKING OUR OWN COAL.

At the summer meeting of the Technical Section last June, a very interesting paper was presented by Dr. R. H. McKee, and printed in the "Pulp and Paper Magazine" for July 8th, 1920, on a process for making ethyl alcohol and fuel from sulphite waste liquors. On another page of this issue is an article descriptive of the method most generally used in Europe for recovering those same products. It will be noted that twenty-one plants are making 95 per cent alcohol at the rate of 5,300,000 gallons per year in Sweden alone. Some of the mills have introduced the additional step of converting the solid material in solution or suspension after the fermentation has taken place, into dry fuel and the so-called coal thus recovered is not only sufficient for running the alcohol and fuel recovery department but to furnish in addition a considerable contribution to the power plant of the sulphite mill.

Experiments, not only in Scandinavia, where the war made it necessary to find a substitute for gasoline, but also in England, Australia and the United States have shown that alcohol with a small addition of a priming substance such as benzol or gasoline or ether makes a very satisfactory and powerful fuel. This is particularly satisfactory in stationary engines but can be used effectively in motor boats and automobiles as well. The large sulphite plant of the West Virginia Pulp and Paper Company at Mechanicville, N. Y. is already turning out sulphite alcohol and no doubt other plants will soon follow their lead.

In Canada there are several peculiarly important reasons why such a process should be of great economic value. In the first place it is economically ridiculous to employ grain as a raw material for the manufacture of alcohol when a waste product which would produce it at cheaper cost is discarded. There are those who would call it a crime to convert the principal food materials into alcohol whether for consumption, the manufacture of chemicals, or for fuel. Another important factor in the situation is the growing scarcity and continually rising prices of motor fuels. When it becomes necessary to squeeze the gasoline out of natural gas and to break up burning and light lubricating oils in order to augment the supply of this liquid it will be seen that we are not far from the time when it will be absolutely necessary to evolve another liquid fuel for internal combustion engines. Work has already been successfully carried out in the development of carbureters and ignition sysytems for the satisfactory handling of enriched alcohol mixtures for such a purpose.

Perhaps the most important factor in the situation, especially in Canada, is the fuel feature. The scarcity of bituminous coal in Eastern Canada and the dependence of our industries on our neighbor for coal, especially in Quebec and Ontario, greatly increases the importance of a process which can economically produce a satisfactory substitute from what is otherwise an almost total waste; in fact the effluent from a sulphite mill is not only a waste product but is frequently a nuisance. If the figures of Mr. Clementson giving $5.13 as the cost of producing a fuel equivalent to a ton of good bituminous coal are within half that value of the actual cost, it would mean that any sulphite mill in Canada could produce its own coal at considerably less than cost at nature's product at the mill. The sulphite industry therefor, in developing one of Canada's chief national assets by converting pulp wood into a highly valuable export material the industry would at the same time be assisting in a marked degree in conserving the fuel supplies of Eastern Canada and would greatly diminish the quantity of imported coal and thus relieve the exchange situation.

To make such a development of the greatest value to the Dominion it is essential that there be no duty on alcohol for industrial purposes. With such a supply of cheap alcohol as the sulphite industry could easily produce, Canada might very soon become a very important manufacturer of chemical products using alcohol as a basic or intermediate raw material. Here again, by encouraging manufacturing industries requiring cheap alcohol, the Government would be further relieving the people of the exchange incubus which is proving such a serious burden to most of our trade.

Canada is employing a rapidly increasing number of motors, both for private and commercial use. The motor truck is supereeding the horse for heavy hauling just as the automobile now dominates in the field of pleasure or business driving. Tractors have proven efficient and economical on the farm and in the forest and we may even one day find our trains hauled by motors, especially through forest districts. The increase of automobiles and trucks in the United States is rapidly overtaking the supply of gasoline to keep them going and the price of this fuel must continue to increase. Here also, is a situation where the Dominion is depending upon the United States for its fuel supply. Canada can be absolutely independent of our neighbor for motor fuel because we could even manufacture the necessary enriching fuel from alcohol itself by the simple process of converting some of it into ether. The immediate conversion of all Canada's sulphite waste liquor into alcohol would of course completely flood the market at the present time but it takes time to develop a new industry and we believe that now is the time to begin. Furthermore, the public will buy an article which at the lowest price gives satisfactory service and if our Canadian sulphite mills could produce a motor fuel as good as gasoline at a lower price—and we believe they can—success is assured for a process producing two valuable materials, both of which are at present contributing to our national dependence upon another country.

COBWEBS.

An early spring may please the farmers but, with the generally light snow fall last winter, it will make it very hard for driving the year's lumber cut.

The International Paper Co. have revised their price on contracts for newsprint for the next quarter to 5½ cents a pound. That is really a generous act on the part of the company. There is such a thing as reducing the price on wood pulp papers to a point where it amounts to giving away an inheritance. Better sell less and live longer.

The Brompton Pulp and Paper Co. have done another very nice thing. The Technical Section offered three prizes for the best essay presented by students on their summer work in pulp and paper mills. The Brompton Company offered to add 100 per cent to any prize won by a student employee at their mills. This generous offer must have been a great incentive, for two of the winners, out of fourteen excellent essays, were by Brompton men. The company "came across."

CANADA'S WATER FREIGHT.

A recent editorial of the Quebec Chronicle says:

"Now we are privileged to state that a movement is on foot to establish a freight service between the St. Lawrence and Chesapeake Bay.

A prominent transportation man was in Quebec recently looking over conditions and, if the lumber and general business picks up, it is practically decided that a tri-monthly service will be established between Three Rivers, Quebec, New York and Baltimore. Two new 5,000 ton steel steamers have been acquired by the company who are planning this route and they are ready to put them into service, if given any reasonable encouragement, such as should undougtedly be forthcoming.

Railway rates are so high that they are seriously interfering with the movement of raw materials and many commodities, so it is evident that water routes must again be brought into use. The revenue of the Canadian railways will not be affected by the proposed service, so it is expected they will co-operate with a view of giving Canadian shippers an opportunity to resume exporting into the United States, thereby restoring commercial activity, the balance of trade and parity of exchange."

On investigation, we find that these ships are controlled by New York interests identified with the Pulp and Paper industry and that Mr. Guy Tombs, of the Canadian Export Company, Montreal, has been asked what tonnage would be available from Canada. Mr. Tombs says it will take some time to compile correct and adequate data.

"Ethyl Alcohol " and "Coal" from Sulphite Waste Liquor

By N. E. CLEMENTSON, Representative in Canada and the United States for A. B. "Ethyl", Stockholm, Sweden.

The following article was prepared for the "Pulp & Paper Magazine" by M. Clementson who is the representative in Canada and the United States for the Ethyl Co. (Aktiebolaget Ethyl) and explains the new methods of that company for the recovery of alcohol and solid fuel from waste liquors. Mr. Clementson is known to a number of Canadian engineers.

The Swedish Manufacture of Sulphite-Spirit.

The sulphite industry in Sweden and the utilization of sulphite-spirit for technical purposes is a subject, which may count upon particular interest in these days of coal shortage and rising oil prices.

The commercial sized experimental plant where the methods of the Ethyl Company were perfected and where research is constantly going on.

The task of the "Ethyl-Company" has been, and still is, to turn to account the organic and inorganic substances in the refuse lye from the sulphite cellulose industry.

That industry, as well known, produces what is called chemical wood-pulp from wood by boiling it with "Sulphite-acid". In this process there is obtained, as by-product a refuse lye (sulphite-lye), containing both organic and inorganic substances from the wood and sulphite acid. This lye, which formerly ran to waste in the watercourses and there caused damage and various nuisances, spoiling the fishing, etc., contains about 50 per cent of the wood used, which amount has thus been lost. In 1909, when about 385,000 tons of sulphite cellulose were manufactured in Sweden, there thus ran into the watercourses a quantity of wood substance that was at least equally great. Since then this quantity has risen enormously from year to year owing to the great development of the sulphite cellulose industry. In 1909 as mentioned before, the output was only 385,000 tons, but as long ago as 1912 it had risen to 670,000 tons and in 1916 to 771,000 tons. During the last few critical years, owing to causes connected with the war and its sequel, the output has not attained this figure; but there is every reason to believe that the sulphite industry will continue to develop in the future.

It is quite natural, therefore, that chemists all over the world should have worked with the object of taking into account the valuable substance in the refuse lye; and in fact this work began as early as 1887. As a link in this chain of endeavour the "Ethyl-Company" was founded in 1909 with the object of working certain patents held by Mr. Gosta Ekstrom, the inventor of Ethyl Company's methods.

It was at Skutskar sulphite plant the 24th of May 1909, when the first manufacture of sulphite-spirit in the whole world began.

The Methods of the "Ethyl-Company".

The amount of fermentable sugar, which is formed during the "sulphite cooking", is depending on several factors such as the quality of the wood and the sulphite acid and also the temperature and time of cooking. As these factors are different with different methods of cooking to obtain varying qualities of the sulphite cellulose, the amount of fermentable sugar in the sulphite lye also varies at different plants and even at the same plant. Of course, the amount of dissolved organic substances also changes, and varies between 10.5 oz. to 23.3 oz. in the gallon sulphite lye. The quantity of this sulphite lye also varies, but is, together with the sugar-percentage, largest at such plants, that cook with direct steam and produce bleached sulphite pulp. When the cooking is completed the lye is drawn to one or more collecting tanks. This lye now contains besides water, free and bound sulphurous acid, organic acids, fermentable sugar and unfermentable sugar, organic sulphonates, etc. In the procedure of manufacture the sulphonic acids and the greatest part of the organic acids are separated and taken care of, and the remainder, which is the fermentable sugar, is converted into alcohol (C_2H_5OH). When the alcohol is made, there remain in the sulphite lye, unfermentable sugar and organic calcium sulphonate, which have not been changed during fermentation, rather purified, and which are good as raw materials for other industries such as artificial "coal making", a procedure which will be treated later.

The ethyl alcohol and coal plant which is operated in connection with a Swedish sulphite pulp mill. The large building at the left is a part of the sulphite mill and in front of it are shown the neutralization tanks from which the liquor goes for fermentation and distillation to the buildings in the centre, while the coal plant is shown at the right.

The Manufacture of Ethyl-Alcohol (C_2H_5OH).

As the sulphite lye is drawn from the digesters at certain intervals it is necessary that the collecting tanks (A) are made big enough so that the spirit factory can work independent from the supply of sulphite mill. The amount of sulphite lye varies greatly, but as an average it is about 1,452 gallons per ton manufactured pulp. This is only half of the sulphite-lye in the digesters. The other half follows in the pulpmass and is washed out, but will then be so diluted, that it can not be used.

The sulphite lye is pumped from the collecting tanks up to the neutralization tower (B) in which it is neutralized with limestone and lime and at the same time is stirred up by blowing in steam from underneath. This method is very simple compared to the use of expensive and delicate tubes. After the neutralization the sediment is allowed to settle, and the almost clear lye is drawn off to the clearing tanks (C), where any remaining slime is allowed to settle. The temperature of the lye is now between 158 to 175 degrees F. From the clearing tanks it is pumped through a cooling tower (D) to fermenting tanks (E), where the temperature is brought down to 86 degrees F. In the fermenting tanks (E), where the first alcohol is produced, is added yeast and nourishment for the same, as the lye does not contain any substance to feed the yeast cells. When the fermenting procedure is in action the yeast becomes 10 times larger, thanks to the presence of the nourishment. The extra supply of yeast which is received this way, is carried over as the nourishment for the next fermenting process. A loss of nourishment, that can not be avoided is replaced by sulphate of ammonia or superphosphate or phosphoric acid. The lye which is now fermented, contains 1 per cent alcohol by volume and is pumped to the supply-tanks (F), in which the carbonic acid, formed during fermentation, is separated. From these tanks the "mash" is pumped continuously to the elevated "mashing tanks" (G), from which the liquid runs down to the distillery apparatus (H). From here the liquid is continually delivered as 95 per cent ethyl alcohol. In order to control the amount of spirit that goes through, it is delivered to measuring tanks (I), and from there to the tanks (K) in the Spirit storage house.

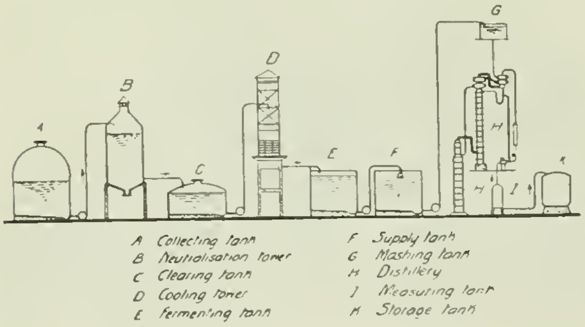


Diagram of Sulphite Spirit Plant.

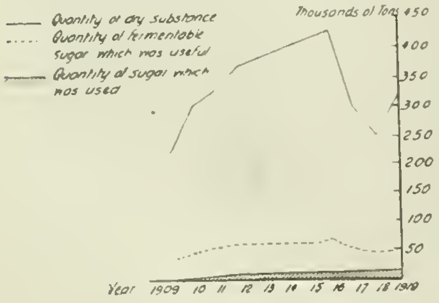


Diagram showing amount of substances in Sulphite-lye during the Swedish manufacture for the period 1909 to 1919.

The Development of the Sulphite Spirit Industry in The World.

As has already been mentioned, it was the "Skutskar" sulphite works, that first took up the manufacture of spirit from refuse lye. At the experimental factory the output per day was 457 gal. of spirit of normal strength (50 p.c.) or about 148,000 gal. per year. This manufacture made such a profit that the Company soon determined to extend the plant to take care of all the lye from the sulphite factory. Since the spirit factories at "Kvarnsveden" and "Bergvik" came into existence in 1911, the output capacity in Sweden was 1.4 million gal. of 50 p.c. spirit per year.

In 1916 there was started a new factory on the Gota river with an output capacity of about 610,000 gal. spirit of normal strength.

A view of the tanks in the fermentation building. The evolution of carbon dioxide is shown by the foaming of the tank in the foreground.

In 1918 six more factories were started with an aggregate capacity of about 2,680,000 gal. of 50 per cent spirit. In the following year 1919, yet another six factories were started with a capacity of about 2,700,000 gal. of normal strength. In year 1920 a further five factories are ready with a capacity of 2,500,000 gal. of spirit of 50 per cent strength. Therefore 21 factories are at work in Sweden, which at full work, can produce 10,000,000 gal. spirit of normal (50 p. c.) strength per year or 5,300,000 gal. at 95 p.c. Nevertheless these factories would utilize only a minor part of the refuse lye, that is obtained from all the sulphite cellulose works in Sweden.

By the close of 1911 the Company had the satisfaction of seeing its methods for the production of sulphite spirit embraced with so much interest in America, that the largest American firm in the cellulose line, namely, The West Virginia Pulp & Paper Co., resolved to erect a sulphite spirit factory at its sulphite cellulose plant at Mechanicville. Great interest was also displayed in France, Austria-Hungary and Germany. In Switzerland where there was only one considerable sulphite factory, namely Cellulosefabrik Attisholz A. G.; that company resolved in 1913 to lay out a sulphite spirit factory on "The Ethyl Co." methods.

As early as the summer of 1916 the German Government had made a contract with "The Ethyl Co." for manufacturing licence for sulphite spirit and in the spring of 1917 the first factories had started working.

In Norway and Finland also during this period so much interest had been aroused, that four factories were erected in Norway, while in Finland the "Ethyl Co." methods for the manufacturing of sulphite spirit were purchased by the Finnish Senate. In that country six spirit factories were planned and drawings completed for them.

"The Ethyl Co". can thus look back with satisfaction on well planned work during the last decade for the exploiting of its patents in the sphere of sulphite spirit—a work which has yielded the magnificient result, that no fewer than 45 sulphite spirit plants have been erected or planned on the Company's methods in the world.

The "Quality" of Sulphite Spirit.

As people outside the chemical world seem to consider sulphite spirit the same as wood alcohol it is worth while to mention the great difference.

Wood alcohol consists mainly of methyl alcohol, which is written chemically as CH_3OH. It is obtained in dry distillation of wood and separated from the tar and water mixture in column apparatus. The wood-alcohol obtained here is sold as such and contains besides methyl alcohol, acetone and higher ketones together with empyrheumatic substances. It has a bad smell and is poisonous.

The sulphite spirit is different from wood alcohol, made by fermenting cellulose sugar and consists of ethyl alcohol, which is chemically written C_2H_5OH.

Ethyl alcohol is practically made by the fermentation of liquids containing sugar. As starting material most commonly used "starch" is the most prominent. Starch is easy to obtain and easy to convert to fermentable sugar.

The fact exists, that cellulose also can be changed by the action of certain acids on fermentable sugar. It is by hydrolysis of the cellulose and also from other factors, that the refuse lye from sulphite pulp manufacture contains a certain percentage sugar. It is therefore natural, that alcohol produced from this sugar will be just as pure as if made from sugar derived from starch. It has been shown by tests made by this Company, that the raw product received from distillation of the fermented refuse lye is more pure than the same product from potatoes or grain.

From the following table it is perfectly clear, that the sulphite spirit is just as good high grade spirit as spirit obtained from grain or potatoes. The latest products received from the new distillation plant at "Gota" compared as superior to grain and potato spirits.

The use of sulphite spirit for technical purpose.

Besides being used for human consumption, spirit is mainly employed in the chemical industry for heating and lighting purposes and as a fuel for motors.

In the chemical industry spirit is used for the production of ether, acetic acid, pharmaceutical preparations, such as chloroform, chloral, iodoform, etc., in the manufacture of aniline dyes, for the preparation of polishes and varnishes, as solvents, etc.

For lighting purposes it can be used to heat the incandescent mantles such as Auer and Welsbach make. For heating purposes spirit has mainly been used in small apparatus in households and in industry as in spirit lamps for cooking food. Its extensive use for this purpose has not been due to its cheapness in comparison with other fuels, but rather to the fact that, owing to its many sided usability, cleanliness and convenience, it has advantages over other liquid fuels.

The use of spirit as fuel for motors.

In 1916 there was published the result of an inquiry, made under the Swedish Board of Trade into the usability of sulphite spirit for driving motors; and the main results of this inquiry were the pronouncement, that sulphite spirit was suitable motor fuel, and that special advantages could be gained, if motors were constructed specially designed for spirit. During the war it has been necessary to use sulphite spirit to a very great extent for driving motors in Sweden, and the experience thus obtained has confirmed the correctness of the pronouncement recorded above.

Any petrol motor can be worked with spirit, if a few minor alterations are made. In order that the sulphite spirit might come in common use, it must be able successfully to compete economically as well as technically with gasoline. If motors of high compression are used the spirit fuel will last just as long as gasoline. All that is necessary is to use the Ethyl Co's new carburetor "Asmo"—a suction carburetor, which is very simple in construction and which can be used for gasoline just as well as for spirit. This carburetor has shown in comparison with the best makes in the market, that it is more fuelsaving than the others. It is now in steady use by the omnibuses in London. Without any extra

Table to compare samples of "Ethyl alcohol" from:—

	Sulphite-lye.	Grain	Potatoes
1. Specific Gravity	0.8107	0.8101	0.8096
2. Percentage alcohol	96.53%	96.67%	96.78%
3. Appearance. — All solutions clear.			
4. Diluted with twice the volume water. — All solutions perfectly clear.			
5. Residue from evaporation per liter	0.090 gr.	0.0290 gr.	0.0064 gr.
6. Total percentage of acids expressed in cc. n/10 NaOH, per 50 c.c.:	0.05	0.05	0.05
7. Test for higher alcohols. — No smell of higher alcohols. No residues.			
8. Barbéts fine alcohol tests; Time in minutes			
After: 1st. minute	Red	Salmon color	Red
2nd. —	same	same	Salmon color
3rd. —	same	Yellow	same....
4th. —	same		Yellow
5th. —	same		
6th. —	Salmon color		
9th. —	Brown red		
20th. —	Yellow		
9. Aldehyde test	Dark red	Dark Red	Dark Red
10. Vitalis test. — After several hours, no rose-red zone.			
11. Furfurol. — All clear. No coloring			
12. Sulphur. — Hardly noticeable trace.			

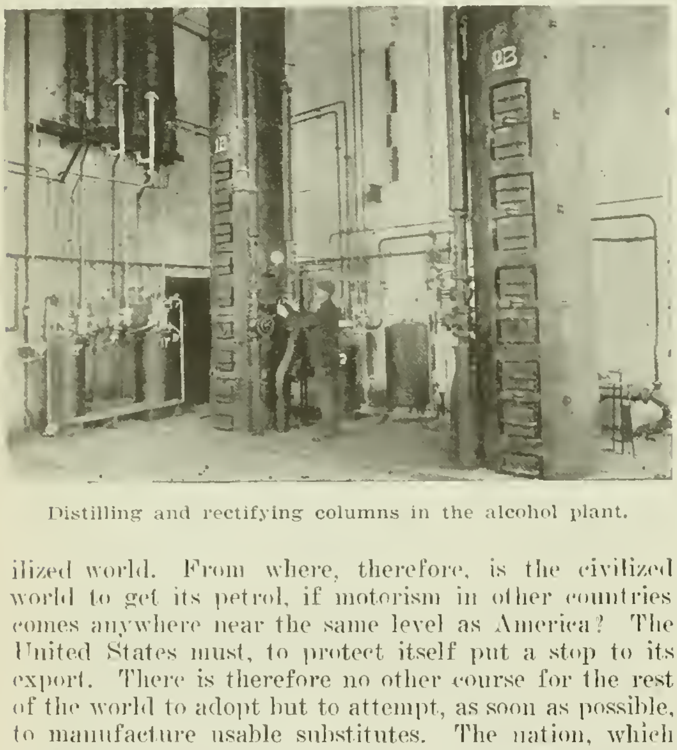
device it sucks the fuel as high as 7 feet, which makes it independent of the elevation of the fuel tank. This, together with eliminating the vacuum tank, makes it very convenient for automobiles and motor boats.

If sulphite spirit is used for motor fuel it has to be carbureted by 10-15 per cent benzol, which also serves as methylating fluid, thereby making it useless for drinking purpose.

Benzol is obtained as a by-product in coke plants and gas works to a great extent, there is no reason why sulphite spirit should not have a great future on the American Continent compared to the more expensive gasoline.

The world supply of oil running dry.

It is asserted in certain quarters, that the world supply of mineral oil (petroleum) is so great, that there can be no question of any shortage of petroleum or petroleum products within any measurable future. But if one looks at the petrol question as a whole one comes to another conclusion. U. S. A. produces 13/20 of all the petrol in the world and itself consumes more than that quantity. The population of the United States forms only about one sixteenth of that of the rest of the civilized world. From where, therefore, is the civilized world to get its petrol, if motorism in other countries comes anywhere near the same level as America? The United States must, to protect itself put a stop to its export. There is therefore no other course for the rest of the world to adopt but to attempt, as soon as possible, to manufacture usable substitutes. The nation, which at once fully perceives this and acts accordingly will thus, when the critical moments arrives, have the richest experience and thereby gain an incalculable advantage.



Distilling and rectifying columns in the alcohol plant.

There is no doubt that spirit is the fuel which is best suited to from a substitute for petrol, partly because of its chemical and physical properties and partly it can be produced in unlimited quantities. The motor fuel of the future, therefore, will be a mixture of Spirit with Benzol or Spirit with Ether, which is easy to obtain from the spirit itself.

"Coal" out of dry substance enough to drive the whole Sulphite Plant.

After the sulphite spirit is made from the sulphite lye, there is left considerable amount of unfermentable sugar and organic lime sulphonates, which is plainly shown by the above diagram. This residue is made more suitable for "Coalmaking" through the fermentation process during the spirit manufacture. Therefore these industries are intimately connected.

The substances exist in a very dilute solution and it is necessary to get them in concentrated form. The solving of this problem is therefore dependent upon the possibility of separating the dry substance from the water at reasonably low cost. The separation of the water from the dry substance can be done either chemically or through evaporation.

The chemical method.

This method aims to transform the easy soluble dry substance in the sulphite lye to an insoluble sediment, which can be separated from the main part of the water and the rest of the water is then taken out by centrifuge and drying. It has, however, been shown, that only 75 p. c. of the dry substance goes into this sediment. On account of this and the high temperature (200 degrees C) at which this process has to be worked it is very uneconomical. The practical use of this method is hampered also through the fact, that the sediment must occur in sour sulphite lye.

The Evaporation method.

This method has many advantages, no loss of dry substance and relatively low pressure and temperature, but it is entirely depending upon the degree to which the heat from the evaporation steam can be utilized. In order to take care of the evaporated steam, it is necessary to put the lye in boiling and to keep the escaping steam at such a high pressure, that the heat from this steam can be used to generate more steam. It is also to be observed, that the amount of in-going steam must at least be as large as "the evaporated". There is at present no apparatus in the market, which can claim to do this.

In regard to the treatment of the sulphite lye, its collodial nature must also be considered and also the fact, that all water must be driven off in order, that the remainder or dry substance can be used as fuel. It is possible to increase the pressure of the escaping steam, so it can be used to heat the evaporators in order to generate more "evaporated steam". The compression of the escaping steam * naturally requires a certain amount of power, which is dependent on the heat transmitted per square inch and of the surface. The transmitting intensity (greatest temperature diff. per second per unit area) is very large in "The Thunholm Evaporator" and in using them economical evaporation results are obtained and therefore this problem can be considered solved.

The Thunholm Evaporator differs from others in that the heating surfaces are flat ring-shaped plates and not tubes.

The factors, which influence the transmitting intensity are as follows:

1. The depth of liquid on heating surface.
2. The cleanliness of the heating surface.
3. The heat conducting capacity of the material in the separating wall.
4. The absence of condensing water on the opposite surface.
5. The speed of steam over this surface.

The construction of "the Thunholm Evaporator" makes it possible to satisfy above conditions. The evaporation is continuous from inlet to outlet and transmission of heat is done under the most favorable circumstances, the movement being from bottom towards the top.

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* The steam, or vapor evaporated, is mechanically compressed, and thereby "charged" with more heat units.

1. The depth of the liquid can be selected according to the nature of the solution.

2. The cleanliness of the heating surface is provided for by slowly rotating scrapers.

3. The heat conducting capacity of the material in the separating walls is made large in that the plates are very thin and spliced in a special manner.

4 and 5. The absence of condensing water and the speed of steam is made large by specially constructed canals between the two bottoms, so that the condensing water is thrown away from the bottom surface of the plate by the great rush of the steam.

As an example of how well this apparatus transmits the heat it can be mentioned, that with a difference in temperature of 6 degrees C. between the steam and the solution 100 kg. steam per square meter per hour was evaporated.

The concentration to which the solution can be evaporated is determined by the viscosity of the same. The evaporation can continue until crystallization begins. For the final drying process a special apparatus is used.

The energy which is used to compress the steam is, per cubic meter of lye, about 30 horse power. If water can be used it is the cheapest. If the dry substance derived is used for firing to evaporate, the cost is equal to zero; of course this reduces the amount of dry substance obtainable for firing purpose in other parts of the manufacture. One cubic meter of lye gives 125 kg. dry substance with a heat value of 3,800 Cal. per kg.

The Price of This "Coal."

In general 30 times 3,500, (= 105,000) Cal. is used in an up-to-date power station to generate 30 horse power.

The total heat energy from 7 cubic meter lye in dry substance is equal to 125 times 3,800 equal to 475,000 Cal; therefore 22 per cent of total heat energy from the lye is used for evaporation purposes, and the remaining 78 per cent or 97 kg. dry substance can be used for the other manufacture. The cost to obtain these 97 kg. dry substance is therefore dependent on the cost of installation and the interest on the capital cost and also on the operation.

The cost per installation per cubic meter lye for one year is about 1·25 dollar. If the interest on this is 18 per cent and the cost of operation is equal to 7 cents, the total is equal to 0·18 times 1·25 plus 0·07 equal to 29·8 cents. The cost for 1,000 kg. coal will accordingly be equal to 2·98 dollars or say 3 dollars a ton. This price equals $5·13 per ton of best coal (6.500 Cal.) How important this is for a sulphite plant, which generally lays in places, where coal is not obtainable, can easy be figured out.

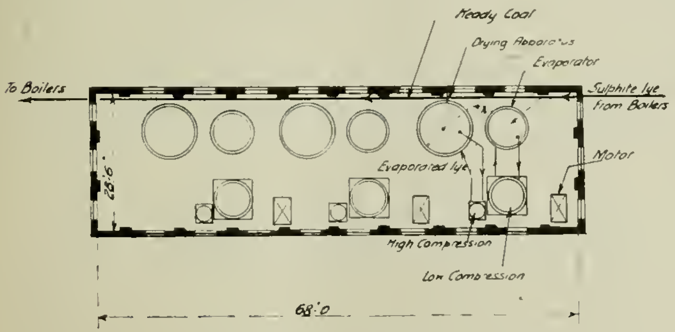

Diagram of Coal Plant.

The amount of fuel which can be obtained per ton dry pulp is of course dependent on how large a quantity of lye can be received and washed out before getting too diluted. It can be figured to 6 cubic meter per ton dry pulp, which makes (with 97 kg. fuel per cubic meter lye) 580 kg. fuel per ton dry pulp. This quantity is enough to cover the need of the sulphite plant for fuel, provided the fuel consumption at the plant is treated in an up-to-date manner.

5. Below is shown a plan of a "Coalplant" for a sulphite factory with the capacity of 22,000 tons dry cellulose per year.

Production Cost of Sulphite—Coal.

Sulphite production, 70 ton pulp per day.

Waste Liquor Recovery, 5·5 cubic meter per ton pulp.

Yield of Coal, 125 kg. (275 lbs.) per cubic meter waste liquor.

Production Cost per Cubic meter Evaporated to 125 kg. Coal.

Labor Cost and Management—	
5 laborers at $4.50 pr. weekday..	$22.50
1 Superintendent, per weekday..	7.00
	$29·50
At 70 tons a day at a day at a rate of 5·5 cub. met. pr.ton, there is obtained 385 cub. met. daily. The cost pr. cub. met. is therefore, 2,950÷385·· .. .. ·· ..	$ 7·00
Light and Power—	
30 H.P. are needed to evaporate 1 cub. met. lye, or expressed in kg. Cal, 30x3,500, 105,000kg. Cal. Using coal from the plant itself the amount of kg. Col. available, 125 x 3,800=475 kg. Cal. 105,000 x 125÷475,000, 28 kg. Coal are used. Therefore Coal obtained pr. cub. met. lye is reduced to 97 kg. and the cost to obtain these is equal, $0·00··	··$ 0·00
At a building cost of $1·25 pr. cub. met. lye and allowing an annual depreciation on the building cost of 12 per cent and an interest of 6 per cent or together 18 per cent, the added cost for manufacture of 275 lbs. Coal will be, $0·18 x 125······	··$22·50
Total··	··$29·50

Price per ton of Sulphite-Coal and amount obtained obtained per year—

275 lbs. Coal cost, $29.50.

2,240 lbs. Coal cost, 10.51 x 29 $3.50, per ton.

Amount of Coal (3,800 kg. Cal.) obtained pr. year—

Pulp produced pr. year, 21,000 ton.

Waste liquor recovered pr. year, 115,500 cub. met.

Coal obtained pr. year, 213 x 115.500=24,601,500 lbs. or 24,601,500÷2,240=12,300 ton of Coal, with a calorific value of 3,800 kg. Cal.

Prices and amount estimated in Steam-Coal (6,500 kg. Cal.)—

1 ton of this Coal will cost 6,500÷3,800 (=1·71 x 3.00)=$5.13.

The amount obtained will be, 3,000÷6,500 (=0.584 x 12,300, or 7,200 ton pr. year of the best Steam coal.

Production cost of Sulphite Alcohol.

Sulphite production—20,000 tons pulp per year.

Waste Liquor Recovery—5.5 cubic meter (1455 gallons) per ton of pulp.

Yield of Alcohol—1.1 per cent by volume of Waste Sulphite Liquor (average yield.)

A.—*Production cost per cubic meter (264 gallons) of Waste Sulphite Liquor treated.*

Raw materials:	
Steam: 300 lbs. at 10 lbs. pressure req. 50 lbs. coal (from "coalplant") at $5.13 per ton coal	11.6c
Neutralizing agency: 20 lbs. at $5.00 per ton	5.0c
Chemicals	2.3c
	18.9c
Labor cost and Management:	
7 Laborers at $4.50 per week, day	$31.50
1 Superintendent. per week day	7.00
1 Controller (inspector), per week day	7.00
	$45.50
At 70 x 5.5 cubic meter waste liquor daily or 385 cu. m. is the cost per cu. m.	
4550 ÷ 385 = 11.7c	11.7c
Power and Light:	
50 H.P. at 30.00 per year or $5.00 per day, or the cost per cu. m. is 500 ÷ 385	1.3c
Various expenses..	2·0c
Materials and repairs	2.0c
Cost per each cu. m. of waste liquor	35.9c

B.—*Production cost of one Gallon 95 p.c. Ethyl Alcohol.*

At 1.1 p.c. yield of alcohol per volume of waste liquor, the amount of alcohol obtained per each cu. m. waste liquor (264 gallons) is 2.9 gallons of 95 p.c. alcohol, or the production cost per gallon of 95 p.c. alcohol is 35.9 ÷ 2.9	12.4c
The annual output of alcohol will be at the yield of 1.1 volume p.c. or 0.011 x 1455 x 20,00 320,100 galls. 95 p.c. Ethyl Alcohol per year	
At a building cost of $180,000 and allowing an annual depreciation on the building cost of 10 p.c. and an interest of 6 p.c., or together $28,800 — the added cost per gallon of alcohol will be — 2880000 ÷ 320100 = ...	9.0c
The total cost per gallon 95 p.c. Ethyl Alcohol..	21.4c

SUGGESTIONS ON HEATING AND VENTILATING PAPER MACHINE ROOMS.

Valuable suggestions on heating and ventilation of paper machine rooms are contained in a paper on this subject by Edward A. Ryan, which is published in the January issue of the Journal of the Engineering Institute of Canada, 176 Mansfield Street, Montreal. Mr. Ryan recommends the combination system of supplying and exhausting air mechanically, and places special emphasis upon the need for a system which will be sufficiently flexible to permit control of the quantity and temperature of air circulated through the machine room as may be required by prevailing weather conditions. Mr. Ryan also discusses the possibilities of greater economy by re-circulation of a portion of the total air handled in cold weather.

The chief advantages of a properly designed and operated ventilating system, according to Mr. Ryan, are increased production due to fewer shutdowns, greater safety for the workmen because of better illumination when the excess vapor is carried away, a more even product resulting from uniform humidity and temperature, and a longer life for machine felts due to decreased moisture content of the air in the machine room. — R. T. S. in "National Safety News".

CONCERN IS NATION-WIDE.

That there is a deep, nation-wide concern over the forest situation in Canada is shown by this letter, which has been kindly loaned to us by Mr Barnjum, whose last contribution appeared in the Pulp and Paper Magazine for March 3rd. Mr. Hibberson's stirring article will be found on another page. His letter is as follows:

F. D. J. Barnjum, Esq.,
Annapolis Royal, N.S.

Dear Sir:

I have read with great interest your contributions to the Canadian Forestry Magazine, regarding the timber wealth of the East and its depletion.

You in the East, are looking towards British Columbia for your future supply of timber, and I am afraid that the bulk of the lumbermen do not realize how little timber we really have in British Columbia. Our firm for the past seventeen years has been examining timber in British Columbia, examining some four hundred to five hundred square miles per year, and incidentally travelling over a tremendous acreage of adjacent timber lands.

Our filings have shown conclusively that our timber wealth has been greatly exaggerated; and whilst we have ample supply for present needs, ten or fifteen years hence, will see, in our opinion, the beginning of a timber famine.

I am taking the liberty of enclosing a copy of an address which I delivered before the Associated Boards of Trade of British Columbia, in Vancouver recently. I think it might be of interest to you.

We have come to the conclusion that British Columbia will be called upon to supply a large proportion of the needs in the very near future. Our pulp wood supplies are very limited: as you know a large proportion of our timber in British Columbia is Fir and Cedar and only on the West Coast of Vancouver Island, the Queen Charlotte Islands and the North East portion of Vancouver Island hold any large pulp wood supplies; the timber in these Districts being chiefly Hemlock and Balsam, or as it is called on this Coast, Larch. There is little Spruce on the Coast of British Columbia, the bulk of our Spruce being in the Northern Interior.

With cordial wishes, we are,

RYAN, McINTOSH TIMBER CO., LTD.,
per R. W. HIBBERSON.

Victoria, B.C., February 22, 1921.

DURABILITY OF RAG PAPERS

As a result of the exhaustive tests made by the Bureau of Standards for the United States, as to the durability of rag papers, the following report has been made:—

"Results of tests upon approximately 150 samples of paper stored since March, 1909, it is noticed that bonds and ledgers, containing 100 per cent rag, did not deteriorate in bursting strength as much as printing, writing and similar paper containing wood pulp. The loss in bursting strength for the first class of paper tested was about 11.9 per cent, while the bursting strength for the second class was 20.4 per cent less than when tested 10 years ago."

Transactions of the Technical Section

The Editor is sorry for the misfortune which caused this excellent paper that Mr. Hoxie read at the annual meeting of the Technical Section to be omitted from the Pulp and Paper Magazine of March 3, when the discussion of this subject was printed.

FIRE INSURANCE OF PULP WOOD.

By F. J. HOXIE, Engineer and Special Instructor,
Associated Factory Mutual Fire Insurance
Companies, Boston, Mass.

Insurance rates on pulp wood as well as other property are ultimately made not arbitrarily by the insurance companies but by the management of the mills. Still further, the best protection is originated at the mills.

If the loss records of a class of risk shows this class to be unprofitable at the prevailing rate the rate or protection must be increased. It is nearly always easier to increase the rate than to increase the protection as it generally requires a careful study of the process as well as of the fire records to effectively improve the protection without harm to the manufacturing processes.

Not infrequently a panacea or universal protective remedy is applied consisting of more pumps or hydrants which will doubtless improve the fire protection in so far as it applies to the problem in hand, but careful study of fires must be given to determine whether such fire extinguishing appliances can accomplish the desired end with a reasonable outlay.

Prevention is better than cure in fire protection as well as in medicine and it is mostly by carefully administered fire prevention that the mill manager reduces his insurance rate. By care and good judgment he establishes a reputation for a process or industry of which the loss ratio over a long period of time is the final index of success. An observant manager, discovering that a given machine or process is subject to frequent fires puts his mechanics and chemists in search of a remedy. The insurance inspectors in going from mill to mill discuss this problem with different managers thereby getting a great many different opinions, serving as a clearing house for information, distributing the good ideas from mill to mill, collecting the varying fragments of experience and piecing them together, whereby an efficient system of fire protection applicable to this particular machine or process grows rapidly or slowly in proportion to the number of careful observers at work and the speed with which experience accumulates and information is exchanged. Gradually a standard method of protection is formed and the efficiency of this standard protection determines the ultimate insurance rate.

Careless management not only injures the good reputation of a mill but of an entire process, whereas careful and ingenious managers can improve the reputation of a process which has fallen into bad repute. It was this idea of co-operative fire protection which brought the Factory Mutual Fire Insurance Companies into existence and reduced the insurance rate on cotton mills from, in the neighborhood of 2 per cent to one tenth of one per cent.

It is apparent that in this method of rate making the most general and rapid exchange of ideas and experiences will tend to most quickly establish the lowest possible rate, therefore efficient and judicious publicity is desirable. If insurance companies insist arbitrarily on an unjustly high rate the profit will sooner or later attract competition into the field which will bring the rate down. This judicious publicity and exchange of ideas will keep the industry as well as the insurance companies informed of experience and of improved means of combating losses. The insurance companies have no independent source of infallible judgment in connection with new processes. They are entirely dependent upon experience tables in determining the value of protection or prevention and in new methods of protection, experience, of course, which accumulates slowly is not available, therefore the only course of procedure is to be guided at first by the apparent reasonableness of the protection proposed, analyzing the experience, whether good or bad as rapidly as it accumulates. It is thus that the present high efficiency of automatic sprinkler protection has been gradually built up and it is thus that the protection of log piles by water spray must proceed. The starting point is the reasonable premise that wet wood does not ignite as readily as dry and if from any unusual cause such wet wood becomes ignited it burns much more slowly than dry wood, particularly in the early stages of the fire, at which time it can be most efficiently extinguished. These are matters of common experience. The apparatus required for applying spray to log piles is not complicated or expensive. Interruptions in its operation are at once clearly apparent. In this respect it has the advantage over automatic sprinklers in which failures are generally the result of obstructions such as shut valves which are not apparent before the occurrence of the fire.

From the small amount of experience thus far accumulated it appears that common varieties of pulp wood may be kept quite uniformly at from 50 per cent. to 60 per cent. of moisture by means of water spray. This high moisture content will greatly retard the growth of fungus and prevent it altogether during the short periods that pulp wood is commonly stored. It should act more favorably to pulp making processes than present methods of storage, as the uniform though high moisture in the chips should make it possible to secure greater uniformity in the strength of the chemicals in contact with the wood, and although this moisture is high it is not higher than a considerable part of the chips under present conditions of storage. Moreover, some of the chips under present conditions are nearly bone dry, therefore present conditions should give rise to the widest possible variations in the strength of the pulping liquors in contact with the wood cells in different parts of the same charge.

In conclusion, the process of insurance rate making by the mills as described herein is now in active progress. In connection with this work on the fire protection of pulp wood, at least six large mills have installed some form of spray apparatus for continuously wetting piles of pulp wood and are now making careful observations on the effect of this wetting on the pulp and the rotting of the wood. This work has not yet progressed far enough to draw broad general conclusions but a few preliminary reports have been made which are encouraging. The chief object of preparing this paper is to start discussion and make available experience as rapidly as it accumulates.

Nearly two years ago when this method of protecting pulp wood was suggested to Colonel Jones, manager of the Spanish River Mills he stated that he already had under consideration a similar idea and he soon after covered a large pile of pulp wood with spray nozzles of a form devised by his own engineers. Since that time his research department have been making continuous observations on all phases of the subject and have doubtless already accumulated much valuable data which will be of the greatest service in furtherence of this study.

(Discussion to be concluded.)

British Trade News

(From our London Correspondent.)

London, March 1, 1921.—The British Fair of Industries held in London at present displays exhibits covering 4½ miles. It is representative of all British industry and buyers have attended from all parts of the world on the invitation of the Board of Trade, who sent out thousands of complimentary cards. There is a fine show in the paper section and everything can be seen from newsprint to the finest printings and writings, as well as boards and kraft paper, tissues, and so on. There is also a good display in the stationery section. In connection with the Fair there is the reports credit scheme under which a manufacturer can receive part payment for an order obtained in any foreign country in the scheme. The scheme enables him to be sure of his money, as the Government has a financial agreement in existence with the country to which the finished product is going. There was one humorous element in the Fair the other day. Only British made articles are displayed, but one over-zealous stall-holder unconsciously displayed German-made specimens. The result was the Government shut up the stall very quickly and now it is the scene of much curiosity.

Dividends.

Amongst recent dividends announced by paper mills are Olives Paper Mill, Ltd., who declare an interim dividend at the rate of 10 per cent from July 23, 1920 to January 22, 1921. Annandale & Son, Ltd., are paying 7½ per cent on the ordinary shares and the Culter Mills Paper Coy. 10 per cent. These are very good dividends particularly when one considers the serious depression in the latter part of 1920..

Price of Newsprint.

The question of the price of newsprint has been under consideration by the Paper Makers' Association. Foreign competition and the agitation for cheaper paper has no doubt influenced them in arriving to a decision as this week quotations have dropped 1 cent per lb. The price is now 8½ cents (4¼d.) per lb. and there is every likelihood of it being further reduced in the near future. No doubt the easement in the pulp prices quoted last week has something to do with the reduction in newsprint prices. It is rumored that newsprint is down as low as 8 cents for large consignments; but this price does not yet touch what was being asked a month ago for Scandinavian.

Standardization of Paper.

This is a subject that printers are giving much attention to at present. The opinion of the printing trade is that paper should be sold per "mille" or "thousand," and packed in 1,000's, 500's, or part of a thousand as may be convenient. It it should be essential to deliver an even 500 sheets, it would be necessary for the printer to break into another ream, and unless the paper were usually stocked by the printer, it would be probably much better to purchase an extra quire at a slightly higher price so as not to have oddments of paper. It is also contended that if a customer insists on having a particular paper which is not in stock, and 500 copies, he ought to pay the slight extra cost incurred by buying the odd sheets necessary to give him his exact quantity. These are just little problems the printer is getting ready for the paper makers in England.

The Paper Situation.

The situation in the paper industry shows no improvement and the depression still continues. News has reached London from Scandinavia that inquiries are being made from consumers as to prices and stocks but it is feared these are due to the recent announcements in the pulp industry and that not much weight is attached to them. The British paper makers are mostly concerned with the export trade at present as it is a branch that requires great attention and study, particularly at the present time with German subterfuge methods in existence.

Board Supplies.

During the month of January the United Kingdom imported 129,117 cwts. of strawboards, valued at £121,648; 36,509 cwts of millboards at £71,641, and 16,412 cwts. of cardboard at £56,492. Canada's share in these supplies were as follows: Strawboards, 200 cwts., worth £400; millboards, 11,618 cwts., worth £24,067; and cardboard, 106 cwts., worth £138.

In millboards Canada enjoys a nice trade with the British market. Her rivals are Finland, Sweden, Norway, Germany, and U.S.A. The Dominion, however, tops the list in supplies and next comes Finland and Sweden. In strawboards the Netherlands commands most of the trade and there is much room for Canada's development of trade. The same may be said of cardboard and pasteboard.

Pulp Market.

There is no important business in the chemical and groundwood markets. Good supplies are arriving in the country and quotations are still as follows: Bleached sulphite, £50; Easy Bleaching, £37 7s. 6d; Sulphite News, £32 10s. 0d; Unbleached Soda, £32 10s. 0d; Soda Kraft, £30; Groundwood, 50 p.c. wet, £10; Groundwood, dry, £20. Prices are per ton c.i.f. British ports.

Members of Parliament Debate Pulp.

The House of Commons a few nights ago enjoyed a little debate on woodpulp. It was raised by Horatio Bottomley, the principal owner of the weekly paper in London called "John Bull," who suggested that Germany could help herself in paying the war indemnity by giving England such useful manufactures as woodpulp and that without injuring labor in the country. Mr. Lloyd George asked "How much?" But he answered the question himself. He said, "You would put the mills of Newfoundland out of order, and the Anti-Waste League could not possibly run its campaign. Their election literature might not be repeated and there are some papers that might go out of print. How much wouldpulp would be brought into this country if all of it were brought from Germany? If you said to Canada—we do not want any more stuff from you; and you said to Sweden—we do not want any more from you, we are going to trade with nobody but Germany. All of our papers, weekly and daily are going to be printed on something which will be marked made in Germany. It will be stamped on Mr. Bottomley's paper . . . " The House roared at the way Mr. Lloyd George pulled Bottomley's leg and Lord Northcliffe's papers over the suggestion, which was eventually allowed to fall through.

Conservation of the Timber of British Columbia*

To the average man in the street, British Columbia is all timbered. He travels by train through the interior of British Columbia, or by steamer up the Coast and the country everywhere looks green; therefore it must be timber. If you told him there is every danger of a timber famine in British Columbia within fifteen years, you would be ridiculed; but there is a VERY DECIDED DANGER of a timber famine, and before many years lapse, we will all begin to feel it.

Ten years ago, the centre of the logging industry was within a radius of fifty miles of Vancouver. Today, it is from one hundred and fifty to two hundred miles from Vancouver, and in some cases operators are towing logs as far as SIX HUNDRED MILES to their mills, and an average tow of two hundred miles is quite common.

Ten years ago, the average cost of logging was $5.00 per thousand feet; today it is nearly $20.00 per thousand feet and in some of our Cedar Camps last year, the cost was over this figure.

Ten years ago, most of our logging was done within a mile of the salt water; today we are hauling by railroad ten to twenty, and in some cases more by railroad to salt water, before we commence to tow logs to the mill.

The interior of British Columbia has the same conditions; where formerly saw mills were built in the heart of the timber, today, logs are brought distances up to seventy miles by water and by rail. This means heavy expense and conditions are getting worse every day. The general public is clamoring for cheap lumber. THERE CAN BE NO CHEAP LUMBER IN THE FUTURE, if the logger and mill man is to make a fair profit on their investment. Lumber will steadily rise in price as the timber recedes farther and farther away from centres of population, and the cost of getting the logs to the mill, increases year by year.

Formerly a logger with a capital of five to six thousand dollars, could open up a camp and produce logs; today his machinery will cost him approximately one hundred thousand, before he can commence to operate. I have in mind, one operation, not twenty miles from here, where a logger spent one hundred and twenty-five thousand dollars, building his logging railroad and putting in camps, etc., before he made a cent, then when he was ready to operate, a slump came and he had no market for his logs.

The price of logs governs the price of lumber; and with the consumer demanding cheap lumber, the mill man naturally is demanding cheap logs. The logger in order to get his logs as cheaply as possible is devastating our forests; cutting only the timber that can be cheaply handled, smashing down all the smaller timber in the process of logging and leaving in the woods to rot or to be burnt, some 30 to 40% of the volume of the timber on the ground. He cannot afford to attempt to log much of the timber on the high elevations or on the rough ground; broken timber is left and on most operations on rough ground, fully half of the timber never reaches the mill, it being broken up and left on the ground.

There is no country in the world, that would tolerate the wasteful logging methods practised on the Pacific Coast of Canada and the United States. It is not logging, it is forest devastation. Whom are we to blame?

The logger, in order to make a fair return on his investment, and log all the timber on the tract, carefully taking off, first all the smaller timber, and then logging the heavy timber, must have an increased price from the mill for his logs. Therefore, the consumer cannot look for any cheap timber in the future, as the cost of operating is continuously climbing.

We have been credited in British Columbia with having 350 billion feet of standing timber. Of this I have no hesitation in saying that there will not be 100 BILLION FEET actually taken to our saw mills in the form of saw logs. This figure of course refers to our virgin timber. Our present output is approximately two billions of feet per year; this figure will be more than doubled within five years, and by 1930 British Columbia will be called upon to supply at least six billion feet per year, possibly more.

As is well known, the Eastern United States is almost denuded of timber, they are already dependent on Eastern Canada, the Southern States and the Pacific Coast for 90 p. c. of their domestic requirements in lumber. The Southern States which now cut approximately twelve billion feet per year, will, within seven years, cease to be an exporter of lumber, and the Pacific Coast will be called upon to supply the deficiency.

The United States annually uses 38 billion board feet of lumber; that is to say, all the saw timber we have in British Columbia would only last the people of the United States three years. Her wood fuel consumption is enormous. Last year, it was 110 million cords. The United States Railroads used annually, 125 million railroad ties, and six billion feet of timber is used just for boxes, crates and barrels.

Already the people on the other side of the line are preparing for a timber famine. Reforestation is practised in many of the Eastern States. The pulp and paper companies, who formerly were self-supporting in pulp timber, now obtain 2/3 of their pulp, paper or pulp wood from Canada; and if as is quite probable, Canada prohibits the export of pulp wood across the line, most of these companies will be put out of business, and investments totalling hundreds of millions of dollars will be wiped out.

In Quebec and Ontario, the large pulp and paper companies realize the necessity of continuous supply of timber; and although they still have thousands of square miles of timber, they are now engaged in systematic reforestation on the cut over areas; as fast as a tract is logged, they plan to reforest it. Their logging methods are supervised by Government foresters, and no waste is tolerated. The Government of the Province of Quebec is now planning to fix the maximum annual cut of timber and also a minimum cut, to stop speculation on Government lands. They have sent young forestry engineers to Europe, to study the best forestry methods and are engaged in reforestation on a large scale.

It is time that British Columbia took warning and re-organized their Forest Branch.

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* Address recently delivered in Vancouver before the Associated Boards of Trade of British Columbia, by Mr. R. W. Hibberson of the Ryan, McIntosh Timber Company.

In Quebec and Ontario, timber is cut down to, in some cases, 4″ on the stump for pulp making, and in this connection, it may interest you to know that last year some of the paper mills of the United States sent crews of loggers into the remote sections of Ontario and Quebec, where the freight alone on cord wood amounted to $16.00 and over per cord. Last year the United States pulp and paper mills used over five and one-half million cords of wood. This means a solid pile of wood four feet high, four feet wide, nine thousand miles long; and bear in mind, this amount is used every year, and the amount is constantly increasing.

In British Columbia, in the Coast District, we waste most of our small timber. Hemlock 12 to 20 inches on the stump is not considered to be worth logging. In almost any logging operations on the Coast, you will see the small Hemlock left on the ground: literally on the ground; for the high lead method of logging breaks down practically all the small timber on the tract, and when the operation is completed it reminds one of a scene in a Belgian forest, after it had been devastated by the Hun.

The average Timber License on the Coast, carries approximately twelve million feet of timber; the average amount logged off a Timber License during the past fifteen years is five million feet. Government Licenses have logged as high as eighteen million feet, but a great many have only yielded three and four million feet.

Only the timber on the lower elevations has been logged off, the balance being left a prey to fire and wind storms, which every year claims millions of feet. What is the remedy for this? We cannot force the logger to take off this timber, if by doing so, he cannot make a profit. The average consumer of lumber says he cannot afford to pay fancy prices for lumber in order that the timber can be protected and logged clean. But what will be the ultimate result, if we do not stop this waste? Our virgin timber gone, all our wood working plants, or the majority of them, will be forced to close, and as lumbering is the chief industry of British Columbia, we shall suffer a great loss.

1920 figures give lumbering production as 92 millions of dollars.

1919 figures give lumbering production as 70 millions of dollars, one-third as much again as mining and fishing combined, which only total 48 millions. There are many other industries dependent on the lumber industry. Our wire rope plants, iron works, food supply houses and farmers, will all feel the loss. Our salmon canneries, mines and railroads are large consumers of lumber and will keenly feel the loss of our timber, which will increase their operating expenses enormously.

I have no doubt that you think I am painting a very harrowing picture, and one that can never come about, but it has come about in other parts of this Continent, and will certainly come about here, unless we can take measures to prevent it. The fact that we can ship lumber across this Continent by rail into New York State, to keep the wood using plants there alive, proves it. New York State once was heavily forested, like British Columbia. Her requirements today are 300 board feet per capita. She can only get from her forests 30 feet per capita; the balance of 10 p. c. she must import from Canada, the Pacific Coast and the Southern States.

Less than 5 p. c. of the original forest of the New England States remain. The original Pine forests of Michigan, Minnesota, and Wisconsin, estimated to contain 350 billion feet, talked of as inexhaustible, are now reduced to six billion feet. These densely populated States are now dependent on timber grown and manufactured elsewhere; and in a very few years will be absolutely dependent on Pacific Coast timber.

The bulk of the timber used in the Eastern and Central States during the past fifteen years was grown in the Pine forests of the South, but these forests have been so heavily cropped that they have now been reduced from 650 billion board feet to 150 billion board feet. Much of this is small timber on cut over land; and within seven years, these States will cease to be a factor to reckon with the export business, for they will require their timber for their own domestic use.

At the last meeting of the Southern Pine Association, it was estimated that 80 p. c. of their mills will close within seven years, not having any further supply of timber for their use. This means that British Columbia and the Pacific States of the United States will have to supply the wants of the United States market and the Prairie Provinces of Canada in addition to filling the wants of the export trade, with Europe, Australia, South Africa, the Orient and South America.

Mr. A. L. Clear, President of the Vancouver Lumber Co., some time ago had courage enough to state that we had not nearly the amount of timber in British Columbia that we were credited with. He estimated our resources at approximately 150 billion feet. Dr. Judson Clark, a well known authority on timber in British Columbia estimates the total stand of accessible merchantable timber to be approximately 100 BILLION FEET. Personally, from seventeen years observation and examination of the timber in British Columbia by our firm, I incline to the figures as given by Dr. Clark.

British Columbia has an area of 359 thousand square miles, of which only forty thousand miles is commercially forested. 110 thousand square miles of our timber lands containing 665 billions of feet has been totally destroyed and as the humus has been burnt it will be centuries before it is again covered with a forest growth. The Slocan and Southern boundary countries of British Columbia have been so burnt over, that many of the mines and mining towns have to ship their mining timber and fuel by rail, distances up to seventy miles, and this country a few years ago was heavily forested.

OF THE FORTY THOUSAND SQUARE MILES OF COMMERCIAL FOREST IN BRITISH COLUMBIA, ONLY 50 p. c. CAN BE SERIOUSLY CONSIDERED AS CONTAINING ACCESSIBLE LOGGABLE TIMBER; the balance being on rocky steep ground, where the cost of logging and the breakage would be so great that it would not tempt a logger to operate for many years to come.

The Virgin growth of timber in British Columbia is steadily decaying and should be cut and marketed, but the young second growth on which we depend for our future supply of lumber should be jealously preserved. At present we are recklessly cutting it for tie timber, poles and mining timber, destroying fully 30 p. c. of it during the operation. It is common practice to leave 20 to 40 feet of good sound butt logs in the woods, because it is too large to hew into ties. The same condition applies to operations where mining timber is being logged. This should be checked, and without waste of time. Depletion of our forests in British Columbia within 20 years with a resultant slump in all enterprise that depends wholly or in part on Forest Products can only be averted if action is taken without further delay.

The action we would propose is, that private timber land owners adopt logging methods that will protect and preserve young growth, and leave logged off lands in condition for forest renewal, then the young trees of today will be of merchantable size when needed. This is dependent on keeping fires out of the forests, so that young trees will have an opportunity to grow.

It has been shown, on examination, that unless logging slash is burnt over, the reproduction is very poor, the heavy slash shading the young seedlings. It is necessary for a fire to follow logging operations in order to prepare the ground for seeding. This should be undertaken by the Government, who can take every precaution to avoid disastrous fires.

It takes approximately 80 years to produce trees of commercial size, that will make ties and piling for the Coast, or saw logs for interior mills. Eventually our coast mills will have to adapt their cutting machinery for small logs, for the Virgin timber, once gone, can never be replaced. It takes from 200 to 400 years to produce our large Fir timber, and double that to produce our big Cedar. The fortunate owner of a tract of Virgin Cedar and Fir, will, if only he can afford to hold it for a few years, reap a rich reward.

The relationship of timbered areas to future needs, their incentive to tourist travel; the fact that they serve as water reservoirs, etc., make the public vitally interested in seeing them continued. The reforestation of logged off areas, unfit for agriculture, in the interior of British Columbia and portions of the Coast District, and protection of such areas against fire, is proposed as the solution of the continued timber supply problem. Depletion of our forests has not resulted from the use of the forests, but from their devastation, from our failure while drawing upon our reservoirs of Virgin timber, to also use our timber growing land.

The reforestation will have to be undertaken in the main, by the Government. It is not practicable to enforce the practice of forestry on private timber lands, for the growing of timber of saw log size is an operation too long in time and offering too low a rate of return to attract private capital, always excepting Pulp and Paper Companies, who can use timber long before it becomes saw log size. (In this connection, Pennsylvania planted nine million trees in 1919; fifty million trees since 1900.)

Very shortly we shall see a large increase in the number of these plants, and it is to be hoped that Canadian and Empire capital will be behind them.

In conclusion let me say that it is vitally necessary that newspaper publishers within the Empire, should get together and acquire supplies of timber against the time when they will be worrying not about the price of timber but about the fact that they cannot get supplies at any price.

The heart of the dense forest above Moose Head Lake, Maine, is to be penetrated by a railroad built by the Great Northern Company from Seboomook to St. John Pond, eighteen miles north. The line is to be of regulation broad guage and it will facilitate the getting out of lumber in the St. John River headwaters region which ordinarily would be floated down the river. In addition to the main line there will be numerous branches from one to three miles in length and it is understood that the company plans the extension of the main line to the Canadian border eventually.

WON'T BELIEVE IT TILL BURNED.

In a series of public addresses given before such bodies as the Empire Club of Toronto, Mr. Robson Black, Secretary of the Canadian Forrestry Association, has been setting right many popular misconceptions concerning the forestry situation in this country. One such reference was made during an address at the King Edward Hotel, Toronto, before a large luncheon assembly of business and professional men, when Mr. Black asked and answered the question: "What remedies for forest depletion are being applied?"

"The pulp and paper companies of Canada have openly and sincerely committed themselves to the principle of 'sustained forest yield.' They have recognized the necessity of 'anchoring' the forest as rigidly as they have anchored their mill dams. Fifteen companies have established forestry branches within four years. Several are replanting millions of trees on barren areas. The pulp and paper industry is as diligently in search as any Canadian Government for a workable scheme by which each square mile of timber shall be operated as a self-productive forest crop.

"The moment the business and professional men of Ontario ,and the farmers and labor men who have most to lose, plainly say that the forest resources belong as much to the people of 1998 as to the people of 1921, when they say that our timberlands are a rich treasurehouse that devastation must not touch, the job of conservation is an accomplished fact. Just now the weakness is that not sufficient Ontario men believe that thing with the usual Ontario tenacity, and are willing to say it out loud."

Mr. Black countered the common view regarding reforestation by stating that the major undertaking in Ontario is not to plant trees by human hands, but to take the utmost advantage of the hundred of millions of infant trees scattered through our forests by natural processes. The main job of replanting Ontario's cutover lands will be done by Mother Nature herself, although in many locations she has already refused to do her part in face of violations of almost every engineering and biological law.

"Before the term 'forest conservation' can become much more than an amiable password, we must elevate the forest resources into the very front rank of public policies, and take on the job associated with their management as a first concern in our national economy. I speak of the forest areas of Ontario, not as the private business of the limit holder, but as a public asset of incredible richness vested to the extent of 90 per cent. in the name of the people of Ontario. It is true that we have alienated, or rather leased (mostly for a useful purpose), much of the timber growing thereon, but by the retention of the land title, we cannot alienate the responsibility of the whole people as chief conservator."

Happiness is the only good. The way to be happy is to make others happy. Other things being equal, that man is happiest who is nearest just—who is truthful, merciful, and intelligent—in other words, the one who lives in accordance with the conditions in life. — Robert Ingersoll.

The Russell & Pettengill Company are now in their own building at 1700 Prairie Ave., Chicago. They are industrious Industrial Engineers.

News From Europe

Growth of Finnish Industry.

According to statistics complied by the Norwegian journal, "Teknisk Ukeblad," the industries of Finland seem to be entering upon a new era of prosperity. The textile industry comes first, and then the paper industry: in 1920 the total valuation of paper and pulp produced amounted to 395·5 million marks, out of a gross income of 2,365,157,000 marks. In 1913 the valuation of the raw and half-stuff was 214,318,100 marks. A curious feature of these statistics is that, whereas the number of mills has increased, the number of the workmen employed has diminished.—Teknisk Ukeblad, January 21, 1921.

The German Wall Paper Industry.

In common with other sections of the paper industry, the manufacture of wall paper has met with several set-backs due to various factors, the most serious of which is the shortage of raw materials. The difficulties of obtaining coal are such that even members of the trade, who are not mill owners, have only an inadequate notion of the gravity of the situation. The shortage of coal is serious, but it is not generally known that many of the mills have been driven to round-about ways of securing a supply of firing materials. Fuel of every description, often of the rubbish variety, is being tried, whether peat, pyrites, coke, lignite, briquettes—everything but genuine coal. The extraordinary difficulty of maintaining steam pressure with such low grade fuel is obvious enough, and in the case of a wall paper mill is intensified by its extra steam requirements.

Another factor is the reduced manufacture of paper, which is not received regularly, despite the fact that it is about forty times above the pre-war price, for the paper mills are also short of raw materials, particularly Russian rosin, which is much superior to the Swedish article. In addition the manufacture of dye-stuffs for paper presents the greatest difficulty. Consequently when the dealer examines the stock of a wall paper mill, he will find pulps, but not those which are in current demand. Stocks are also reduced to the point of what is absolutely needed, for otherwise capital for operation would be wholly insufficient.

A third factor is the shortage of size. It is well known that the wall paper manufacturer has fallen back on vegetable size, which before the war cost 18-20 marks per 100 kilos, or 220 pounds. Today the price is 750 marks, excluding freight, and even then the supply is insufficient, so that it must be supplemented by a good deal of substitute material. When wall paper is sized with this the customer complains of the poor quality, although the maker is not in a position to improve it.

With regard to operation, high wages and the absence of skilled hands are the chief obstacles. If orders do not come in, the number of workmen must be reduced, and unemployment is one of the chief cares of the paper maker. Dealers point out the possibility of export business. But export trade may be summed up in a few words: large orders are wanting. The circumstance that exports would permit of selling goods on the home market below the cost of production no longer exists. But, if such were really the case, how could manufacture proceed? With prices reduced by 30 per cent, but wages, raw materials, vegetable size, freights, all higher than in March, when a 60 per cent rise took place? An exception is afforded by paper, but its price is already beginning to harden again. The outlook is certainly not rosy. New designs are suggested, but the position of the designer is gloomy. The demand for patterns is lacking. It is better to give up the manufacture of designs, since rolls have become so expensive that the maker, although he exhibits only a fifth part of the patterns formerly shown, must spend more than ten times their value. At present the cost of patterns and rolls amounts to as much as the entire turnover before the war.—Tapeten-Zeitung, February 1, 1921.

Problems of Fuel Economy in Germany.

There are many signs that Germany is solving the fuel problem, and though the process is necessarily a slow one, and requires much time before it can be brought to perfection or even moderate success, it is having an influence on the paper industry. Granting that fuel must be provided in greater abundance, for without an adequate supply, paper making cannot flourish or exist on a modern scale, it is becoming evident that the Germans, with the assistance of the Scandinavians, have tackled the technical problems with results of two kinds. They have reduced the expense ratio in fuel consumption and operation, and raised the caloric values. According to the study of this subject by the Swedish engineer, A. Hallbach, these results have been effected through the organization of Fuel Administration "genannt Warmestelle." It is an association of 266 companies with its main office at Dusseldorf. It is reported in Stahl und Eisen of December, 1920, that branches have been formed in Karlsruhe and Kattowitz. The experimental and technical work, as well as the business of organization, is performed by 200 officials or experts. The problems which so far have been solved more or less completely are the economy and production of lime, lubricating oils, graphite, calcium carbide, lyes and fuel. Without doubt the scheme will eventually secure a certain amount of stability and operating efficiency in all the mills, unless some untoward event should interrupt it.—Teknisk Tidskrift, January 29, 1921.

Paper Mill in Argentina.

The "Industria della Carta" gives an account of the new paper mill at Barrangueras, which it describes as the "first to be in operation" in the Republic. It has a capacity of 300 quintals of wood pulp a day. The native grass, called "paja brava," is used for the manufacture of strawboards. The fibers are long and of great strength or toughness, and the weed is so plentiful that there is no danger of a shortage of raw material.—Industria della Carta, January 31, 1921.

Norway Exports and Imports News Print.

The Bulletin of Foreign Commerce of Christiania states that exports of print papers of all grades in November were 8,441,287 kilograms, of which 6,636,044 kilograms comprised news print in rolls. In the same month imports of print papers amounted to 26,806 kilograms.—Manedsopgaver over Vareomsetningen, 1921.

A Chinese trust controls the dye used on fire crackers, made from cibucao, a Philipine wood. The same dye is used for sealing wax and Chinese ink.

PULP AND PAPER NEWS

William Snaith has resigned as chief draughtsman of the Riordon Co., Limited, Mattawa, Ont., and has moved to Chicago to accept a position on the technical staff of the Forest Products Engineering Corporation.

According to W. L. Bird, manager of the Fort William Pulp and Paper Company, Limited, pulp will be shipped from the new plant at Fort William by the end of the present month. The contractors, Barnett & McQueen Co. have finished their work a month ahead of schedule and considerable machinery and equipment have already been installed.

The Fletcher Lumber Company, Limited, has been granted Ontario incorporation with head office at Windsor, Ont., and a capital stock of $100,000. The company is authorized to deal in a general lumber, timber and pulpwood business and the provisional directors are J. A. Fletcher, J. F. Twigg, W. M. Wright and A. A. Mackinnon.

With power, among other things, to engage in business as stationers, printers, lithographers, etc., the Federal Advertising Act, with head office at London, Ont. The capital stock is $50,000.

In Toronto last week the Spanish River Pulp and Paper Mills, Limited, filed a statement of claim in their suit against Hon. W. R. Riddell and Hon. F. R. Latchford, commissioners conducting the timber probe. The company say they are always willing to produce documents relevant to he application concerning the right to cut timber on certain areas, but they ask declaration that the commissioners are purporting to act without proper authority in demanding the list of documents for which they ask, and that the order-in-council creating the timber commission is ultra vires.

Former Provincial Treasurer T. W. McGarry left Toronto last week on a hurried trip to British Columbia where he is president of one of that province's big paper producing companies, the Whalen Pulp and Paper Mills. It is stated that his visit to the western province has to do with a big pulp merger that is being negotiated.

Due to the large amount of manufactured product on hand and the prospect of a limited market, the Hydro-electric pulp mill at Campbellford, Ont., has closed down for an indefinite period, according to a despatch from Peterborough.

Twenty-two men of the Mounted Police are still on duty at the Beaver Board mill at Thorold, where a strike is in progress. Seven of the strikers are out on bail under charge of using insulting language to some men who were leaving the plant. The union has retained a Niagara Falls lawyer to defend the men. Ever since the strike started several weeks ago the strikers have picketed the road in front of the Beaverboard plant, but there has been no violence.

Col. Jones, general manager of the Spanish River Pulp and Paper Mills, Limited, and A. J. Gaudette, in charge of the order department of the company, were in Toronto for a few days last week.

The pulp and paper industry will learn with regret that Mr. Joseph N. T. Tallman, President of the Tallman Brass and Metal, Limited, died last month in Hamilton, Ont. He was in his seventy-fourth year.

The Prince Rupert Pulp and Paper Company, recently incorporated in British Columbia, is asking industrial privileges at Seal Cove within the city limits. The company will erect a sulphite mill with a capacity of fifty tons of pulp. It will operate in conjunction with the Emerson sawmill, and the intention is to later build a large paper mill.

Twenty-five thousand dollars has been loaned to the Douglas Fir Turpentine Company, Vancouver, by the provincial government as an aid to establishment. The company, which will engage in the extraction of turpentine from the Douglas fir, has a plant in operation on False Creek, and has completed extensive and successful experiments in tapping the trees.

DISPLAY OF CANADIAN PAPETERIES.

The rather remarkable development of papeterie manufacture in Canada is demonstrated by the opening of holiday stationery at the plant of Warwick Brothers & Rutter, King Street, Toronto. The papeterie department of the company is the special care of the General Manager, Mr. H. C. Woods, who this year has evolved several new and very artistic lines which are attractively displayed in a specially constructed show room at the plant. In design, quality of stock and richness of finish of both the specially milled paper and ornamentation of the boxes, the display of Made in Canada stationery this year is the last word in the creation of fancy holiday goods. A particularly attractive line is Rose Petal which is of the highest grade of No. 1 linen finish paper obtainable. Collington Cloth is another new line, with correspondence cards in harmony with the note paper and envelopes, done in colors with delicate white border. There is also the Persian Creton line of the highest grade kid finish, the boxes being lined with richly colored creton. This variety includes a desk pad with creton trimming to match the boxes. An artistic line of Gentlemen's Club stationery is also shown, while the company's standard lines completes the display. Mr. Woods is justly proud of his creations and reports that orders and enquiries have already justified this further artistic elevation of papeterie manufacture.

The real leader in industry today is not the man who substitutes his own will and his own brain for the will and intelligence of the crowd, but the one who releases the energies within the crowd so that the will of the crowd can be expressed. — Charles M. Schwab.

A man who is never ready to start cannot hope to be "in at the finish."

Technical Section

REVIEW OF RECENT LITERATURE.

A-1; K-0. Use of Southern woods for pulp and paper manufacture. Paper, 23, (Sept. 8, 1920). The South (of the U.S.) has large stands of various species of pines. These contain too much pitch to be successfully reduced by either the sulfite or groundwood processes; they can be reduced by the sulfate or soda processes, preferably the former. The Southern hardwoods (various species of gum wood, cotton wood, sycamore, bass wood, magnolia, willow, etc.) are short fibered and can be most satisfactorily reduced by the soda and sulfate processes. It is not economical under present conditions in the U. S. to pulp plants such as sugar cane bagasse, corn stalks, cotton stalks, various straws, etc., as they offer the following difficulties in handling: they usually contain a large percentage of pitch giving pulps low in fiber content and requiring high chem. consumption; material of this type represents seasonal crops, so that facilities must be provided for the storage of a large vol. of the stock in order to permit the paper mill to operate throughout the year: the susceptibility of such material to decay adds greatly to the costs and difficulties of storage; due to the bulkiness of these materials, the digester charge is reduced, thereby reducing the yield and increasing overhead costs proportionately. Straws are being pulped; but for use in the manuf. of corrugated board and cheaper board products and not as a substitute for refined pulp such as sulfite or rag stock.—A.P.-C.

A-3; K-0. The manufacture of paper from Florida saw-grass. Paper, 20, (Sept. 15, 1920). See also Pulp & Paper, 18, 904, (Aug. 26, 1920). As a result of expts. made with Florida saw-grass as a papermaking material, 2 companies are reported as having been organized for the manuf. of paper from this material.—A.P.-C.

A-4. Micrography of sycamore pulp. L. VIDAL. Papeterie, 42, 434-9, (May 25, 1920); Paper, 18-9, (Sept. 22, 1920). Translation by A. Papineau-Couture. See Pulp & Paper, 18, 1004, A-4, (Sept. 23, 1920).—A.P.-C.

A-3. Possibilities of new fibers for pulp and paper making. ALBERT JANVIER, Technical Director, Papeteries de l'Indo-Chine. Paper 11-2, 32, (July 28, 1920). A discussion of the value of various plants and grasses, principally bamboo, for the production of grasses, principally bamboo, for the production of paper. Translation of art. in Papeterie, **41**, 482-6, Nov. 10, 1919. Director of the French School of Papermaking, Grenoble; but the original article is signed by Albert Janvier. Abstractor's Note.)—A.P.-C.

A-3. The papermaking quality of bagasse. F. HEIM, J. MAHEU, and L. MATROD, Laboratoire Général des Productions Coloniales. Papeterie, **42**, 539-43, (June 25, 1920); 578-87, (July 10, 1920). A detailed chem., microchem., and micrographic study of bagasse and of the pulp obtained therefrom, from the point of view of its suitability for the manuf. of paper. It can furnish a fairly satisfactory material of medium quality provided the sugar factories are supplied with an equivalent amt. of fuel.—A.P.-C.

A-3. Suitability of bagasse as a source of paper. F. HEIM, J. MAHEU, L. MATROD. Papeterie, **42**, 539-43, (June 25, 1920), 578-87, (July 10, 1920); Paper, 11-4, 36, (Sept. 15, 1920). Translation by A. Papineau-Couture.—A.P.-C.

A-14. Testing lime and cement bag paper. PAUL HOUSTAN. Pulp & Paper, **18**, 947-8, (Sept. 9, 1920); Paper, 15-6, (Sept. 22, 1920). An investigation of lime and cement bag paper undertaken by the U. S. Bur. of Standards showed that a lab. test should be developed that would give numerically the stress and strain that the paper of the bag underwent in service the stress-strain or resiliency test was developed. A brass cylinder was constructed and fastened to the upright standard of a 200 kg. Schopper tensile strength machine in such way that it would revolve. The revolution of this cylinder was so controlled by a small wire over a pulley from the weighted pendulum that as the pendulum moved from its vert. position due to the increasing loads, the cylinder revolved accordingly. This cylinder held a paper chart, and a glass recording pen was used to record both load and stretch. The pen was controlled by a small wire extending from the lower jawed arm over a pulley in such a way that as the lower jaw descended and the paper stretched under the load, the pen ascended and described a curve which registered stretch. The revolution of the cylinder caused the registering of load on the chart, while the ascension of the pen caused the registering of stretch. The result was a curve giving both increasing load and increasing stretch. The result was a curve giving both increasing load and increasing stretch until the paper broke. The carrying out of the test is described in detail. The conclusions reached by the Paper Section from this investigation were that this resiliency test was the best known test for showing what the paper would do in actual service.—A.P.-C.

A-11; K-9. Microscopic examination of China clay. Pulp & Paper, **18**, 894, (Aug. 26, 1920); Paper, 18, 32, (Sept. 15, 1920). The refractive index of the mineral is about as follows for lights of diff. refrangibility: red 1.562, yellow 1.563, green 1.571, blue 1.582. These figs. were obtained by mixing oils of cassia and cloves till the mineral showed the Becke effect, when immersed therein, alternately higher and lower after rotation through 90°, the polarizer being in the axis of the instrument. The refractive index of the oil in the particular light was then detd. on the refractometer. There may be an error of one or two units in the 3rd decimals, especially at the ends of the spectrum. Kaolinite (contained in China clay) undergoes a curious change by grinding: the refractive index falls from about 1.563 to about 1.52 for D light. This lowering of the refractive index is not due to the minuteness of the particles. So obstinately does the clay adhere to paper fiber that it cannot be washed out after teasing in water. After boiling in KOH soln. a rough sepn. of the greater part of the fiber can be effected by teasing. The KOH probably removes some of the size used in the prepn. of the paper and cleans the surface of the particles of clay.—A.P.-C.

A-14. Testing tar roofing board. Paper, 18, (Sept.

8, 1920). Translation of original in Papier, **22**, 149, (1919). See Pulp & Paper, **17**, 582, A-14, July 17, 1919. ——A.P.-C.

A-14; K-20. The composition of parchment paper. Paper Makers' Monthly; Paper, 17, 25, (Sept. 29, 1920). The moisture varies from 5-14% but is usually abt. 7-8%. The ash does not usually exceed 5% but extremes of 0.2% and 15% sometimes occur, but very rarely. The water-sol. content ($CaCl_2$, $MgCl_2$, sugar, glycerine, etc.) varies from 0.1-30% average abt. 10%; they are added to keep the paper flexible. Excessive proportions of sugars tend to produce mould when used for wrapping butter; glycerine does not assist much in the production of mould. If parchment paper is boiled in 2% NaOH, genuine chem. parchment papers remain tough, while imitation parchments are easily disintegrated and fall to pieces when rubbed between the fingers. Herzberg's reagent stains genuine parchment more readily than imitation parchment. The latter contains a larger proportion of rosin. According to Annoni a reddish violet coloration when a sample of the paper is treated with a drop of Ac anhydride followed by an equal vol. of H_2SO_4, indicates the presence of rosin and is a confirmation of any previous proof that the paper is an imitatgion parchment. —A.P.-C.

B-3. Need for prevention of costly forest fires. LOUIS ROTHSCHILD. Paper, 11, 25, (Sept. 29, 1920). According to the Am. Forestry Ass., the annual loss by forest fires in the U.S. is abt. $28,000,000. In view of the ever increasing scarcity and cost of lumber and pulpwood it is imperative that fires be prevented in so far as lies within our power. The effects of repeated fires on a growing forest and on the seed stored in the ground is described at some length showing how they ultimately destroy the stand without giving it any chance to grow up again. The appearance of the forest at the various stages of destruction by forest fires is described. A plea is made for better utilization of farm woodlands.—A.P.-C.

B-4; E-2. Cellulose alcohol in Switzerland. Z. angew. Chem., June 15, 1920; J. Soc. Chem. Ind., **39**, 322R, (Sept. 30, 1920). A society has been formed in Geneva with the object of establishing a cellulose-alcohol ind. in Switzerland. Expts. are now being undertaken on the production of alcohol from sawdust cellulose, those by Terrisse having shown good results. It is thought that the price of such alcohol would be much lower that that from sugar-beats or than that of synthetic alcohol, but it should not exceed 25 centimes per kg., otherwise it could not compete with petrol which now costs 1.10 fr. per kg.—A.P.-C.

B-9. Alaska—"A real solution of the paper shortage." LOUIS ROTHSCHILD. Paper, 9-10, (Sept. 15, 1920). Col. W. B. Greeley, Forester of the U. S. Dept. of Agric. considers Alaska can yield a permanent annual pulpwood supply to yield 1,500,000 t. of paper, estimated to be one-third of the present consumption of the U. S. Before the War economic conditions were such that it was not practical to establish mills in Alaska; but the present shortage and high prices of paper have induced capital to make the venture and at present one mill is being erected at Port Snettisham.—A.P.-C.

B-9. Canadian pulpwood resources. D. M. Le BOURDAIS. Paper, 19, 42, 44, (Sept. 29, 1920). G. C. Piche, Provincial Forester of Que., estimates there are 360,000,000 cords of pulpwood in Que., including spruce, balsam, poplar, and jack pine to 4″ in diam. From these figs., allowing for species other than spruce and balsam, for timber not accessible to existing means of transportation, for the diam. limit imposed by the provincial timber-cutting regulations, and for various shrinkages between the woods and the mill (unnecessary waste in logging, merchantable timber left uncut and destroyed by pest, etc., loss of logs on driving, etc.), the Can. Pulp & Paper Ass. estimate Que. has 155,000,000 cords avail. for newsprint manuf. At the 1918 rate of cutting (nearly 3,000,000 cords) the duration of Quebec's pulpwood resources, exclusive of annual growth, is estimated at 52 yrs. Similarly, it is estimated Ont. has 250,000,000 cords, of which 100,000,000 are avail., and 138,000,000 would be avail. if the T. & N. O. Ry. were extended from Cochrane to James Bay. At the 1918 rate of cutting (1,116,000 cords) the duration of its pulpwood resources, exclusive of annual growth, will be 90 yrs. It is estimated that a a rate of cutting equal to that of 1918 (987,000 cords) the forests of N.B. will last 26 yrs., and that the rate of cutting is greater than annual growth. In N. S., on the basis of the av. cut for 1917 and 1918, the supply is adequate for 85 yrs. The Prairie Provs. are estimated to contain 400,000,000 cords of pulpwood, 125,000,000 being estimated to be spruce and balsam: 25,000,000 are at present accessible to existing transportation systems. The B.C. supply of pulpwood is estimated at 179 billion board feet. The 1917 cut was 134,814 cords, at which rate its pulpwood resources may be said to be next to inexhaustible. But with the present world-demand it is quite probable that the time is not far distant when it will have to face the possibility of rapidly diminishing forest reserves.—A.P.-C.

D-4. Increasing grinder production. W. A. MUNRO. Paper, 15, (Sept. 15, 1920). Description of a doctor to prevent the stock which follows the stone from coming out of the pocket and making the wood pinch or bind.—A.P.-C.

E-5; F-5 The Allen automatic control for cooking chemical pulp. C. H. ALLEN. Paper, 21-2, (Sept. 15, 1920): Pulp & Paper, **18**, 1041-2, (Oct. 7, 1920). Sulfite pulp should be cooked automatically for 3 principal reasons: 1) increased production; 2) improved quality; 3) more uniform steam load on the boiler house. The automatic cooking control consists essentially of a power driven steam valve electrically connected to a steam flow meter on the digester steam line, an automatic relief valve, and relief strainers that do not plug. It also includes the automatic sepa. of relief gas and liquor. The steam app. can be set to maintain any constant or varying steam flow curve. Temps, within the digester are proportional to the rate of steam input. The control app. therefore can be set to give any desired temp. curve. Changes in the steam flow curve are very readily and quickly made. The steam curve element of the control system is a small thin plate of Cu having an insulated hole, and is slipped over the chart spindle of the steam flow meter clock. The periphery of this piece of Cu at any point represents the rate of steam it is desired to carry at that particular instant. The steam curve and paper chart of the instrument are rotated by the meter clock. The disadvantages of irregular steam flow and the impossibility of obtaining regular steam flow with hand control or other regulators now on the market are shown. Steam flow charts are given for 3 cooks each by hand control, by a "well-known regulator," and by the Allen control.—A.P.-C.

UNITED STATES NOTES

The period of wage re-adjustment which is now in full swing through the country over, affecting the workers in practically all industrial lines, has hit the paper trade and allied industries, according to reports from leading centers. In Lawrence, Mass., most of the departments of the Merrimac Paper Mills have been shut down indefinitely as a result of a strike of employes who refuse to accept a 20 p.c. cut in wages. About 250 are affected. At Holyoke, Mass., a revised wage scale averaging 10 per cent went into effect March 14. This reduction affects all paper makers and the allied crafts in the city, except the employes of the Crocker-McElwain and Chemical paper companies The latter accepted individual contracts offered them by their employers some weeks ago, consequently they did not come in for the general reduction. The cuts in Holyoke mean an 8 cent an hour decrease for the skilled help, 11 cents an hour less for the unskilled labor, and a cut of six cents an hour in the pay of female workers. The employees of the Harmon Paper Company, Brownville, Northern New York, accepted what virtually amounts to a 20 per cent wage reduction when they returned to work last week, following a shutdown which began several weeks ago when they quit because of the withdrawal by the company of a 20 per cent bonus.

There has been a growing feeling that strikes may be expected by May 1 in Northern New York mills governed by agreements, such as St. Regis Paper Company, De Grasse Paper Company, Hanna Paper Corporation, International Paper Company and Sherman Paper Company. The action of the workers in the Harmon Company mills accepting the bonus withdrawal lends strength to the feeling that, after all, the workmen may see that the companies would not be strictly averse to a shut down, and that the times make wage reduction imperative. If this view is generally taken, it is believed that possible strikes, growing out of failures on wage re-adjustments, may be avoided.

A further reduction in newsprint prices is announced by the International Paper Company. Quotations for newsprint in carload lots for delivery during the second quarter of the year are reduced by the revision from 5.7 cents a pound to 5.5 cents a pound.

Improvements and enlargements, costing approximately $75,000, have just been completed at the plant of the Filer Fiber Company, Manistee, Mich.

A new mill to be operated at Commerce, Texas, by the Trinity Paper Mills Co., of Dallas, Tex., will begin about April 1 turning out paper pulp made from cotton linters. The plant will have a capacity of twenty tons of paper per day. While this will be all shipped to eastern markets for a time, company officials say they will be able after some months to turn paper out as a finished product from the Dallas plant, which will specialize in the manufacture of writing, tissue, blotting, book and newsprint paper. The new enterprises will give employment to several hundred unskilled laborers in addition to those now working in the Dallas mill.

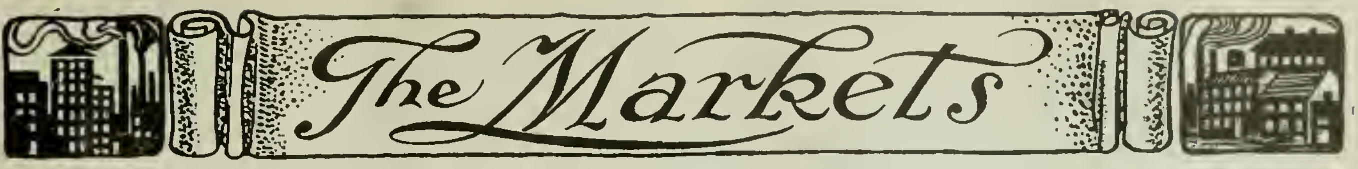
The eighth annual banquet of the National Association of Waste Material Dealers, held last week in the Hotel Astor, New York, brought together over 300 representative waste material men, some of whom came from remote parts of the country to attend. A review of the organization's activities during the year, as reported by the officers, indicate that large gains were made in membership and that the outlook for the association's continued expansion is most promising. Frank C. Overton, of Castle, Gottheil and Overton, was elected president for the ensuing year.

The Federal Trade Commission, in a report submitted to the Department of Justice, following a long investigation of the stationers' trade, recommends that charges of operating a trust be brought against the Chicago Stationers' Association, the National Association of Stationers and all affiliated bodies. Action by the department on the commission's recommendations will probably not be taken until the conclusion of the Hardwood Lumber Association case which is now before the Supreme Court.

"The Color Grammar,"—considered by craftsmen in the paper and allied trades to be as essential to the art of printing and paper making as the grammar and dictionary are to the English language—was explained in detail at the recent annual meeting of the Strathmore Mill and Merchans' Association at Springfield, Mass. C. W. Deardon, Strathmore's advertising Manager, told of the three years' effort to produce the "Color Grammar" and the many discouragements encountered by those interested in the work. The copies produced represented an outlay of nearly $100,000, and the men engaged in the research gave their time declining any compensation for their services. Each considered it a part of his life's work and a contribution for the future benefit of the printing and paper industries. The men responsible for the success of the work were: H. A. Moses, president, Strathmore Company; H. H. Munsell, who perfected the Munsell system of color; Arthur S. Allen, of Philip Ruxton, Inc.; Rudolph Ruzicka; E. P. Kendrick of Redfield-Kendrick-Odell, Inc.; T. M. Clelland and C. W. Deardon. The work, it was pointed out, is intended as a training for color perception and the quickening of the instinct for color, thus avoiding to a large degree the outrages upon color harmony which are constantly being committed in every day practice.

Manufacturers of gummed paper have been sent invitations to attend at a luncheon to be given April 13, at the Waldorf Astoria Hotel, New York, for a general discussion of the conditions and developments in the gummed paper field. The main object of the meeting, it is announced, is the formation of an organization of gummed paper makers which will probably be known as the Gummed Paper Manufacturers' Association.

The first of a series of bills affecting water-power rights in New York State was introduced at Albany last week. The measure places water power companies under the jurisdiction of the State Public Service Commission, with conditions, obligations and power similar to those which regulate gas, electric and steam companies. The power of the Conservation Commission to approve of new sources of water supply are transferred so that the regulation of rates and the regulation of source are placed under the same body.



The Markets

CANADIAN TRADE CONDITIONS.

Toronto, March 19.—The chief feature of the pulp and paper trade this week was the announcement by the George H. Mead Company, selling agents for Spanish River and Abitibi, of their new newsprint price for the second quarter of 1921, which is 5½ cents in the United States, where the bulk of the output of the two companies is sold. This is the same price that was announced a few days ago by the International Paper Company, the largest producer of newsprint in the United States. It was stated at the Toronto office of the George H. Mead Company that it was presumed that the Canadian price would be the same, although the Abitibi Company deals directly with Canadian publishers, and the Spanish River Company will likely adopt that policy after the end of the present month. The new price compares with 6½ cents charged for the present quarter. The Canadian Export Paper Company, which markets the exportable output of most of the other Canadian mills, announced the 5½ cents rate for the second quarter some weeks ago, while J. R. Booth, Ottawa, has announced a 5-cent rate. The newsprint market is somewhat dull as compared with the brisk period of a few months ago and several of the mills are running on shorter time. However, the output is being fairly readily disposed of, although pulp stocks are piling up in consequence of a dull market.

BUSINESS PICKING UP.—In paper trade circles generally there has been a decided improvement in most lines during the past week. Jobbers report that while big orders are still unknown the smaller orders are increasing in quantity with the result that a fair volume of business is being done. There is an optimistic feeling in the trade and it is believed that the buying era is gradually returning. Considerable paper is being turned over and stocks in the warehouses are slowly being reduced both by purchases from the mills and by a system of inter-buying between the jobbing houses. While there has been some improvement in trade conditions the paper business is by no means down to a stable basis as yet and there is a feeling that the mills will yet have to make further price recessions before a satisfactory market level and stabilized conditions are reached. One jobber, who is a manufacturer as well, criticised the policy of making so many bites of a cherry in getting the prices down to rock bottom and declared that the sooner the mills rearranged their prices on a basis of a closely figured cost and profit the better it would be for the paper trade all round.

PULP.—The continued declining market has caused great timidity among buyers of both pulp and paper, and it is the opinion of those in the trade that this timidity will continue till the price is stabilized and the buyers are sure the bottom has been reached. Although buyers agree that prices of some lines approach costs, they feel that present costs are not indicative of the price level where prices will stabilize, for costs, they point out, are bound to decline and the prices cannot stabilize until they reach a level which is based on costs several months in advance. Recovery of business, it is conceded, is going to be slow. At the present time very little business is being done in pulp in Canada. From January until the present time ground wood has gone down from $65 to $50 per ton and occasional lots have been sold slightly below that figure. The decline in newsprint production affects news grade sulphite as well as ground wood, although the effect will not be quite so far reaching as the over-production is not as great, and the low prices will, to a large extent, shut off imports. Bleached sulphite is now practically uniform at 6½ cents f.o.b. mill. A small foreign tonnage is being offered in the United States as well as some from the domestic mills. The demand in Canada is practically nil so the lower prices do not arouse much interest. The contract price for soda pulp has declined from 8c to 6c and mills that have been using pulp for the finer grades of paper are now finding it cheaper to use waste paper. They will likely continue to use it as long as they can get paper stock at $40 a ton. One prominent man in the paper trade remarked to the "Pulp and Paper Magazine" that pulp and paper manufacturers need never again look for the artificial conditions that obtained during the years of the boom period and the quicker that was realized the better. He urged that pulp sales and manufacture should be gotten down to a stable basis so that paper manufacturers could figure out their cost with a fair profit. So far, it seemed to him, only a few of the mills realized that prices should be brought down to a basis of a fair price above solid manufacturing costs, a fact that was hindering the trade from getting back to a stable basis. Other paper dealers expressed the opinion that prices of both pulp and paper were still too high and that all lines would have to come down before a normal state of trade was reached.

PULPWOOD.—Toronto representatives of pulpwood firms report that the demand for pulpwood is very light at the present time and those who have wood to sell are more anxious to get rid of it than to stock up. A year ago when pulpwood was commanding all kinds of prices nearly everybody got into the game and there was an over-production. Then the market prices began to tumble and have been on the down grade ever since. A leading Ontario contractor states that there are virtually no current quotations just now. Nominal prices for wood from points south of North Bay are: rough spruce $11.00 to $11.50 per cord, spruce (peeled) $18; north of North Bay the pulpwood is generally of somewhat better quality than south and, of course, the freight rates are a little higher. The average price for rough spruce is $10.00; peeled spruce $16.00 to $17.00 and poplar $9.00. A number of firms which last year contracted for several thousand cars of pulpwood to be delivered on contract to various mills, have not entered into the purchasing game this year at all, in view of the uncertain outlook and the fluctuating character of the demand. From the east word was recently received that pulpwood is likely to increase in value as the summer months come on but this is regarded in Ontario as more or less of a conjecture, as it is impossible to predict with any assurance just what is likely to happen, so far as the requisitions for mechanical and chemical pulp are concerned. The market has been rather quiet for some weeks.

"It takes less time to prevent an accident than to report one," says the Safety League.

NEW YORK MARKETS.

New York, March 19—(Special Correspondence).—Outshining all other developments in the paper market this week is the readjustment of its contract basis on newsprint by the International Paper Company for the second quarter of the year from 5.70 cents per pound to 5.50 cents f.o.b. mills for newsprint in carload lots. In advising customers of the new price, President Philip T. Dodge of the I. P. stated: "This concession is made in spite of the fact that of all orders signed a large proportion is on the quarterly or 5.70 cents basis. It has been our policy to treat all our customers on precisely the same basis and as many have signed riders under our alternative proposition with fixed price for nine months from April 1st, we hereby extend to such customers the option of having 5.50 cents price apply only to the second calendar quarter, leaving price for the last six months of the year to be determined later according to provisions of contract. We trust that these voluntary concessions made in the interest of uniformity for all customers notwithstanding our continued high costs, will tend to further relieve the present situation in the belief that before the year is half spent there will be a decided movement in business conditions."

It was generally expected in the trade that the leading producer of newsprint would revise its contract basis over the second quarter, this belief being prompted by the steady fall in spot prices on newsprint, which even yet are below the contract basis named by the International and several large Canadian mills. There have been sales of roll news in fair-sized lots for spot delivery down to as low as 4.50 cents per pound at mills, and offerings at 5 cents are freely made. Publishers continue to keep very much out of the open market as buyers, claiming to have present requirements amply covered by contract shipments, and the market consequently is in a dull condition. Whether manufacturers are accepting orders for spot deliveries of newsprint at the low prices named in the trade is questionable, but the fact remains that resale lots have been bought by publishers at 4.50 to 5 cents, while there is a considerable supply of newsprint imported from Europe on the market at these figures.

The Federal Trade Commission reports that during December, Germany shipped 14,000 tons of newsprint to the United States. It was only last Summer that Germany resumed paper exports, and opinion in the trade is that December shipments were extraordinary and cannot be continued.

Prices on several other kinds of paper have receded further during the week. A sharp drop in quotations on tissue paper is reported, and No. 1 white tissue, basis 20x30, is now quoted at $1 and less per ream, while No. 2 white and No. 1 manila, basis 24x36, are priced at around 90 cents a ream. Reports from manufacturing centres say that tissue mills are badly in want of orders and that none of them are operating at anything like full time.

Book papers are slightly lower in price. Offerings of machine finished book down to 8.50 cents per pound for spot delivery have been made by mills, and there have been sales of coated book at as low as 12 cents per pound. The situation in the book paper branch of the market has altered but little, if any. Demand is narrow, few publishers being in the market, excepting for small accounts occasionally, and most mills are operating on materially curtailed schedule.

Sales of No. 1 domestic kraft wrapping at 7.50 cents a pound at mills have been reported, placing prices on wrapping papers on a lower basis. Other grades of wrapping are down in relative proportion, the decline averaging about half a cent per pound. Fine papers are quiet, although in some quarters it is said demand for certain of the low-priced lines of bond and ledger papers has broadened somewhat. Sulphite bonds are quoted down to 12 cents per pound, a fairly good bond being obtainable at that figure today, while one of the most widely known and most extensively advertised watermarked bonds is quoted at around 14 cents, contrasted with a price of above 20 cents when the market was at its peak.

The board situation is marked by dullness. A little better movement of those grades of board used by folding box manufacturers is reported, but the demand on the whole is light, and prices have failed to improve their position. Plain chip board is quoted at around $30 per ton at mills and filled news board at between $32.50 and $35.

GROUND WOOD. — Although ground wood is in a weak market position and prices continue to sag—sales of prime spruce ground wood at $40 per ton this week establishing the market on a lower basis—there is a feeling of optimism among dealers that the situation will recover during the next several months. Members of the trade point out that most grinding mills are operating on curtailed schedule and therefore are not piling up their usual surplus stock of pulp, whereas all reports from grinding sections say that there is very little or no snow in the mountains, thus leading to the belief that the usual drought next summer will be more severe than ordinarily, causing production of ground wood to diminish to a larger extent than normally. There are those consequently who expect prices later in the year to be a good deal higher than now prevail and are not endeavoring to put through sales at present. The market, however, is exceedingly quiet, and about the only business current involves supplies available to buyers at the bottom edge of quotational levels.

CHEMICAL PULP. — The market for chemical wood pulp is in a depressed condition and prices have sunk to new low levels for the present downward movement. Papermakers are buying strictly in hand-to-mouth fashion, limiting orders to pulp directly required, and trade therefore is very spotty and in the aggregate is of light volume. About the most important sale reported this week was one involving several hundred tons of domestic strong unbleached sulphite at a price of $82.50 per ton f.o.b. shipping point. The pulp figuring in the transaction was of high quality and commanded about the best price obtainable for domestic unbleached sulphite at present. News grade sulphite has eased off further. Offerings by sellers at 3.50 to 3.75 cents per pound at pulp mills have met with little response and reporots have been heard, though not confirmed, of purchases at lower figures than these. Domestic kraft pulp is down to 4 cents per pound. Dealers frankly say they are unable to induce consumers to pay higher than 4 cents, and in some cases transactions have been made at further concessions. There is little stirring in the imported pulp trade, and importers are confining their activities almost entirely to purchases at primary sources on direct orders.

RAGS — If there is any improvement in demand

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INQUIRIES SOLICITED

for papermaking rags it is not visible on the surface of the market. Some dealers report mill customers to be evincing more buying interest, but the majority say that they are effecting few sales and that regardless of the efforts put forth they cannot induce paper manufacturers to place orders. Prices have undergone no further broad changes this week, yet the tone continues easy and the probabilities favor buyers getting rags at less than the figures quoted by dealers and packers.

Offerings of No. 1 new white shirt cuttings to mills at 12.50 cents a pound at shipping points have brought out few buyers, while old No. 1 repacked whites have been offered down to 7 cents, with 8 cents asked for the better grades, with buyers showing little interest. Roofing rags are moving in small amounts, but in a fairly steady manner at a price basis of around one cent a pound at shipping points for No. 1 packing. Old thirds and blues are offered at 1.75 to 2 cents for rough packing and between 2.50 and 2.75 cents for repacked stock.

PAPER STOCK. — Only a light movement of old paper into consuming channels is noted, and prices on several grades are on lower levels. Offers of No. 1 hard white shavings to mills at 3.75 cents a pound at shipping points and of No. 1 soft white shavings at 2.75 cents have been recorded while ledgers and writings are available at 2 cents a pound, No. 1 heavy book stock at 1.25 cents, No. 1 old kraft at 1.85 cents and white blank new cuttings at 1.90 cents. Consumers have displayed little desire to buy at these prices, their present policy being to limit purchases to material actually and immediately needed. Folded newspapers rule fairly steady at around 55 cents a hundred pounds f.o.b. New York, and No. 1 mixed paper at 45 cents, but board mills are absorbing such grades in small volume.

OLD ROPE AND BAGGING. — Old rope is moving in scattered directions toward consuming mills and in limited quantities at 4 cents per pound or a shade less at shipping points. Mixed strings also are being bought in small lots by consumers at between 1 and 1.25 cents per pound. Old bagging continues to be neglected, and prices are largely nominal, with offerings of No. 1 scrap bagging reported at 1.25 to 1.50 cents per pound, and of roofing bagging at around 75 cents per hundred pounds.

SHE'S TOO MODEST.

Ebb: "Why don't you wear calico any more?"

Flo: "Oh, I just hate to see myself in print."—The Cornell Widow.

News From Our Advertisers

A Visit to Messrs. C. Walmsley & Co's. Works.

(By our Business Representative in Great Britain.)

I had the pleasure of visiting C. Walmsley & Co's. works, Bury, Lancs., Eng., recently and was received by Mr. Wolstenholme, the Managing Director, and Mr. Adamson, Director and Technical Engineer.

After an interesting chat on the position of the engineering trade for paper manufacture, I was shown over Atlas Works, Charles Street Extensions and Wood Street Works. These works rank amongst the largest engineering works devoted to paper-making machinery in the world, and are equipped with the latest plant, both for castings and the manufacture of paper mill machinery.

MR. JOHN WOLSTENHOLME.

In the Moulding Department I saw the moulding plant prepared to cast cylinders up to 26 ft. long on face, and of all diameters up to 12 ft., these cylinders being cast of a special mixture of metal, producing a very close grained casting, which takes a wonderfully high polish, and in addition is 50 per cent stronger than cast iron. Also, there is a marked difference in the heat conductivity of this special mixture of metal, this being a pronounced feature for drying cylinders.

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Paramine Green G.
Paramine Violet N.
Paraphenine Yellow G.
Diazamine Fast Yellow H.
Rosophenine 10B.
Benzopurpurine 4B.
Paper Black 3181

ACID COLOURS

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Orange IV.
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year ago, are now almost forgotten, and as a result of the bonus scheme instituted by this firm, the output of the foundries has been greatly increased.

In the Machine Shops some very fine tools are installed for high-speed manufacture.

One special feature of the works is the wide bays of good height, each provided with electrically driven overhead cranes.

I was fortunate in seeing the last of the material being completed for the two mammoth machines, which are now being erected at the Abitibi Power & Paper Co., Ltd., Iroquois Falls, Ont. The chief troubles experienced in the building of these machines have been the obtaining of material, which Messrs. C. Walmsley & Co., are bound to purchase from outside sources.

During the last three years large extensions have been carried out to relieve the congestion of their main works, and the whole of the cylinder plant will be apart from the main part of the works, and is being speeded up for a greater output of cylinders. The organization of this plant is excellently arranged, and the management are to be congratulated on the systematic method of manufacture. The cylinders pass immediately from one machine to another without a pause.

Besides Fourdrinier Paper Machines, Messrs. Walmsleys are manufacturing Board Machines, M. G. Machines, Super Calenders, Winders, Paper Cutters, Beaters, Breakers, Steam Engine and Mill Gearing, and they have an extensive order list.

Large works like these, however, need plenty of orders to keep them busy, and as pointed out by Mr. Wolstenholme, they are in a splendid position to give quick delivery of machines.

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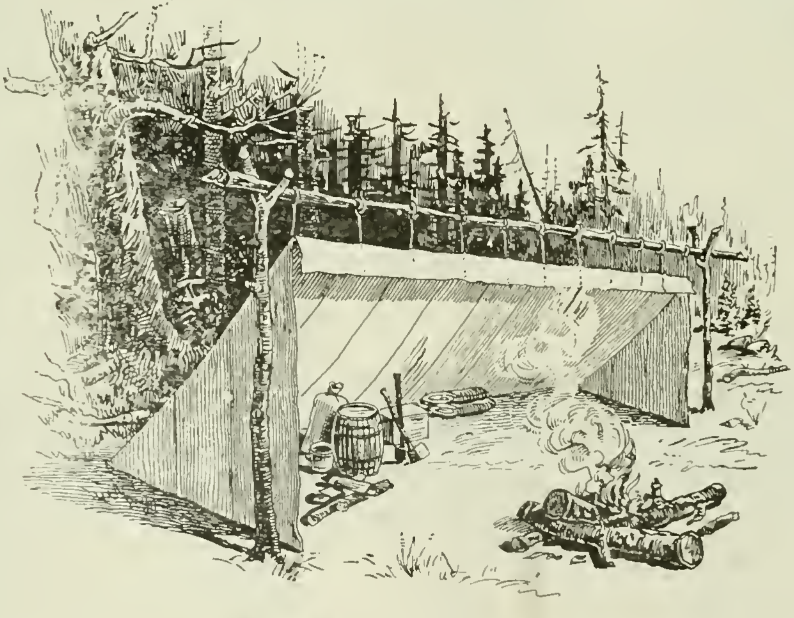

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VOL. XVIX. **GARDENVALE, P. Que., March 31st, 1921.** **No. 13**

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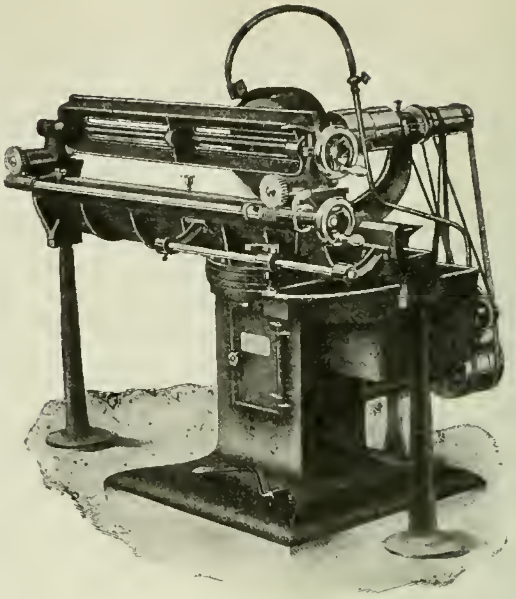

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EDITORIAL

A CORDUROY RAILROAD.

Most lumbermen and many pulpmen are familiar with the corduroy road; it is built of logs—pulpwood. Such a basis may do for a temporary toteroad, but to build a real railway on a foundation of pulpwood is a precarious undertaking, to say the least. From latest reports, it seems that the project of extending the Temiskaming and Northern Ontario Railway from Cochrane to James Bay is likely to be put through. The freight on pulpwood is generally mentioned as the principal source of revenue. For some time it would be the only source of revenue. A very generous estimate (or conservative exaggeration!) gives the amount of pulpwood that would be made available by such a road 38,000,000 cords. This means that 30 to 50 thousand square miles of wooded country would have to be served by the road. That calculation would assume that the road could be reached from all points from 50 to 75 miles on each side. With the principal rivers running parallel with the rails we can't quite see the probability of such a condition, especially in view of the very lavish distribution of muskeag over this area.

It is not considered good form in Northern Ontario to criticise this idea of railway extension. In fact a very prominent and clear thinking man in the district created quite a bit of feeling for suggesting that the possibility of profit to the road should be carefully estimated from an accurate survey before the government commit itself on the matter. That suggestion should certainly be followed. Hauling pulpwood will not support a railroad. What else is there in the country? If the idea is to open up farm land, we could point to miles and miles of land, probably of better quality, along government roads already built and suffering this day for want of traffic. Why assume an avoidable and unnecessary debt?

If it is the desire of proponents of the "James Bay Branch" to assist the pulp and paper and lumber industries by providing more wood we believe they are on the wrong track. There are just two ways of getting out the wood; either to lease timber berths to mills or to grant land to settlers (?) and let them skin the country. From descriptions we have heard from woodsmen who have seen that country, and pictures we have seen, it will be impossible to comply with the present regulation requiring a mill on the site. In fact it is doubtful as to whether wood is yet worth enough to make it pay to operate very much of this country. Nothing like accurate surveys are available. It would seem that Ontario had done enough timber granting by guess and to build a railway on such a basis would be simply adding foolishness to folly.

The way to best serve the province with the timber north of the transcontinental is to preserve the forest. The construction of railways in Canada has caused a lot of forest fires. We need better protection of the forests we have, rather than to increase the agencies for their depletion. It is time to inaugurate better methods of handling available forests. To do so would be investing public money wisely—and it would bring a handsome return.

Construction on the Hudson Bay Railway is to be postponed till the Dominion can better afford it. At present the revenue does not pay the train crew. When the wood north of the height of land is absolutely required by the *growth* of the pulp and paper industry and it is worth the cost of getting it, the James Bay extension should be built.

But, notwithstanding our argument against the immediate building of this road, there is the possibility that we are wrong and that the pulp wood along the Abitibi, Albany and other rivers should be cut now before it rots and thus enable the cut over lands south of the height of land to recover. In such case the road should be a part of a forest policy rather than a railroad scheme, and recuperating forest areas must be efficiently protected.

Readers' opinions are invited.

NOT THE SAME THING.

The recent announcement that the Industrial and Educational Publishing Co. is establishing a paper mill has brought out the fact that a number of people think that company is synonymous with the Pulp and Paper Magazine. The Company does publish this magazine, but Pulp and Paper is by no means the most important part of its business; in fact this journal requires only 3 1/3 per cent of the paper used by the company. It is not the Pulp and Paper Magazine's paper mill. The mill would be just as important a part of the company's development without this journal.

Trees are best transplanted when vegetation is dormant and the Industrial and Educational Publishing Co. feels the same way about transplanting the paper mill. This, by the way, is the first time that such a plant has been moved from one country to another and may inaugurate a new species of migration. A Montreal paper remarked only this month that such a transfer had never been made, but that some American companies had built new mills in Canada. It seems to us that Canada gets a considerable advantage when a prosperous paper mill ceases operations in the United States and resumes in this Dominion. The total supply and demand for paper is not affected thereby, but Canadian capital, labor, and materials find new employment.

COBWEBS.

Mr. Dawe, congratulations are superfluous.

We got more dollars than sense in the table of production costs for Sulfite Coal on page 321 in our last issue. The cost of 275 lb. of coal is obviously 29.50 *cents* and 2,240 lbs. $3.00.

A firm of investment bankers announces in an attractive advertisement in a Montreal paper the advantages of investing in pulp and paper securities, emphasizing the many necessary uses of paper. One picture shows a bank with check books, typical of commerce; another shows the wrapping of packages, one of which is flying off on wings. To our mind the wings should be on the check book.

Our faith in government (reports) is shaken. A U.S. Commercial Attache in Chile reports that the Chileans *whitewash* the pulp. Perhaps that is cheaper than bleaching.

PREVENTING EXPRESS SHIPMENTS FROM GOING "ON HAND".

While it is a decided advantage to the transient shipper to have the express carrier hold his goods for him until he arrives, and to do this without added expense, it was not intended that regular express patrons would ask or expect the carrier to store their goods while some argument between shipper and consignee was being settled. The express company does not generally charge for storing shipments, but some such step may be taken unless the situation improves.

In seeking the cooperation of the shippers the transportation company lays emphasis upon the importance of every shipper having the fonsignee's full name and address, street and number, plainly stencilled or otherwise marked, on each piece he sends by express. It is equally important, the carrier points out, that each shipper shows his name and address clearly on each piece of a shipment.

That consignees should accept delivery of shipments tendered and not leave them on the carrier's hands, is the contention of the express company in this campaign. This should be done even if shipments are offered in bad order, for then the consignee can dispose of them to the best advantage and thereby reduce the loss to the lowest possible figure. Shippers and consignees are urged to give special attention to postal notices sent out by the carriers to both of them, when a shipment cannot be delivered by an express driver, for any reason.

When a shipper is informed by the express company, through the usual postal notices that the consignee to whom he sent his goods has refused to accept them, it will facilitate matters if he will give prompt and definite instructions for the disposal of the shipment in question.

U.S. PATENTS INCREASING.

Prepared for the Pulp and Paper Magazine by Hanbury Budden, Montreal.

Each year towards the end of February the report of the U. S. Commissioner of Patents for the preceding year is published in the Official Gazette.

The report for 1920 which was published recently contains some interesting figures, particularly when compared with those of a pre-war year such as 1913. In that year there were granted 33,941 patents and 5.065 trade-marks were registered. Last year 37,164 patents were granted and 10,282 trade-marks were registered. The increase for patents being about 10 p.c. and for trade-marks 100 p.c.

The following table shows the number of patents granted to residents of foreign countries during the two years:

	1913	1920
England	908	1,189
Scotland	63	81
Ireland	17	19
Wales	10	18
Canada	557	750
Australia	82	115
New Zealand	45	60
South Africa	12	29
India	7	15
Germany	1,433	173
France	340	405
Austria Hungary	168	18 ..
Switzerland	131	171
Sweden	87	187
Italy	55	80
Belgium	54	23
Russia	48	7
Norway	31	79
Mexico	31	23
Denmark	28	64
Cuba	21	33
Holland	20	66
Japan	19	54

Germany ras dropped from first to fifth place. Each portion of the British Empire has advanced, Canada now takes second place. France in spite of the war has advanced. Italy shows an increase. Marked progress is evident in the Scandinavian countries and Holland, while Japan has more than doubled its record.

The receipts of the Patent Office, Washington, for 1920, were $2,679,948.31 and the expenditures $2,572,097.56.

The figures given out recently by the Commissioner of Patents, Ottawa, for the same year are: receipts, $354,497.97, expenditures $170,588.17.

T. A. P. P. I. BANQUET.

All the indications are for large attendance at the annual banquet of the Technical Association, which will be held at the Hotel Astor, Broadway and Forty-fourth Street, New York, on the evening of Tuesday, April 12. Arrangements for the banquet follow the lines of previous years to a large extent. There will be responses to toasts by invited guests of distinction in the fields of chemistry and engineering, and the courses will be enlivened by singing and music as formerly. Several new features will be introduced and held as a surprise for the evening of the banquet.

April 11-18 is PAPER WEEK in New York. Don't miss it.

The Gray Terror

Not a Moving Picture.

By ARTHUR L. DAWE.

(Reprinted by permission.)

They were nearing the end of a long, monotonous journey. John Day, who had managed to secure a morning paper at the last stop, sat back in the arm chair of the smoking compartment and turned at once to the market page.

Austin Garvin, the paper manufacturer, sat half-reclining on the seat opposite to him, blowing smoke rings and giving a more or less sympathetic ear to the alert-looking but pessimistic young man seated beside him.

"I was teller," the young man was saying in a low voice. "At least, I was one of 'em—they had a dozen tellers. It wasn't my fault she was the General Manager's niece. But he fired me. Said he was sorry because he considered me bright, resourceful and ambitous, but—"

THE AUTHOR.

"Perhaps he thought you were a little too ambitious when you wanted to marry his niece," suggested Garvin.

"Suppose so," assented the young man. "But he had to have some other excuse. Said I was careless; said I wasted a lot of the bank's stationery—just as if there wasn't plenty of paper in the world! So I went out West. Didn't strike much out there. Coming back to look things over in the old town."

He gazed thoughtfully out of the window at the somewhat dreary panorama visible through a fine, drizzling rain.

Garvin sat up, aroused to sudden interest.

"Tough luck!" he concluded. "But let me tell you if you *were* carless in the matter of paper you made a big mistake. You probably never thought of the importance of paper. Let me tell you, paper supplies the sinews of our modern civilization. Let me recite you the lines of Holman T. Day—a name-sake of my friend here, by the way."

And in his slow, musical drawl he began:

"I am Paper; I am Paper, standing ready for your call,
White and silent and unspotted. I am serf and slave to all.
Have you thought or inspiration? Have you word to send or save?
I am waiting, calm and patient, still your servant and your slave.
Write! What is it, threat or secret, bargain, pledge, or sale, or boast?
Sign! Ah, mortal, I have bound you! Mark you well the forest's ghost!
Here I stand and threat and mock you, shade of promise, debt, or fraud,
Work and pay, or pray for mercy! You are servant, I am Lord!"

Day found Garvin's low, penetrating voice forcing itself upon his consciousness despite his effort to read. He attempted to concentrate his mind upon the stock market news but without success. And he knew that once Garvin was launching upon his favorite topic there was no stopping him. Angrily, he turned the paper back to the front page with its screaming line of large red type across the top. Then he straightened up suddenly with an exclamation.

"What is it?" he heard Garvin ask lazily. "New type of aeroplane? Strike of the doughnut founders? What?"

Day paid no attention to these flippant queries. "Listen!" he said tersely.

"Reservoir of Poison Gas for the Front Explodes," he read. "One million cubic feet of the new noisserped gas, destined for use against the Germans but held here by the signing of the armistice, was released by an explosion at the East docks which awoke the city early this morning. Professor Huested, the inventor of the gas, was reached by telephone, and stated that inasmuch as the gas had already been neutralized as regards the ill effects it would have upon the human tissues, there had been no loss of life, and the lives of citizens were not endangered, even though the light wind which was blowing at the time of the explosion might carry the gas across the city. He said, however, that the gas, in its present state, acts as a very strong corrosive of cellulose fibres, and that trouble may be anticipated in the city from this cause. Should rain fall, preventing the wind from blowing away the gas, a calamity might result, he added. Professor Huested requested the newspapers to warn all citizens immediately to seal important books and documents and—"

Garvin chuckled. "These professors with their theories and their warnings," he remarked sarcastically. "I suppose this fellow would have us believe—"

He stopped abruptly and Day saw him staring at the back of the newspaper—staring at it in a tense, fascinated way, as though something about it had hypnotized him. Day looking at him over the top of the paper saw his face suddenly pale, his mouth open, and the cigarette which he had been holding between his lips fall unnoticed to the floor.

"God!" he muttered. "It's true! Look! Look!"

He pointed with a quivering finger to the newspaper.

The last sheets of the paper had eluded Day's grasp as he had turned it in his hands. They were floating loose, wafted about by a little breeze which came through the half-opened window. Day turned the paper over. The loose sheets had disappeared, and a fine gray dust covered the legs of his trousers and the floor at his feet. Day dropped the paper and the three men sat silently, almost breathlessly, watching it as it turned a dull gray color, darkening rapidly until the print disappeared and only the red line across the top was decipherable, then crumbled suddenly and became a little heap of gray dust. A curious acrid odor filled the compartment.

The alert-looking young man jumped to the window and slammed it down. He next leaped upon the arm of Day's chair and, reaching swiftly up, banged to the small ventilator-window in the roof of the compartment. After which sudden display of combined presence of mind and agility, he resumed his seat and gazed with great interest upon the heap of gray dust that had been a bulky newspaper a few minutes before. Then quickly he turned to look for a small parcel which had been lying upon the seat beside him. The brown paper covering had disintegrated into gray dust, disclosing a pair of rubber overshoes.

"Remarkable thing! he muttered.

"Remarkable!" shouted Garvin. "Remarkable! Terrible, you mean! Why, man, think what this means down in the city. Paper—all paper—gone—books—My God!—money!"—He leaped to his feet and thrust his hand into his pocket, withdrawing a roll of bills. The edge of the outer bill was gray. He hastily stuffed the roll back into his pocket.

The alert-looking young man picked up his rubbers.

"Know they'd come in handy, though I hate wearing 'em," he remarked to himself.

He shook the gray dust out of one of them and grinned.

"Saved me the trouble of unwrapping them, anyway," he added.

Drawing a somewhat slim-looking roll of money from his pocket, he stuffed it into the sole, and quickly pulled the over-shoe over his boot.

"Safest bank in this district," he declared, looking quizzically at Garvin. "What size shoe?" he asked.

"Seven," replied Garvin. "Fit?"

"Right size," said the young man enthusiastically. "Now, about the price. Sell you this other rubber for ten dollars."

"You're on!" agreed Garvin.

Day sprang forward in his chair. "I'll give you fifteen," he shouted.

"Now, look here, John," protested Garvin, "I—"

But the young man cut him short.

"No time to hold an auction," he declared. "Deal made. Don't pay me now. If you open up your roll you'll lose it. My name is Brennan—Jimmie Brennan—I know your name—Garvin—I'll collect after—after this is over."

He threw the rubber to Garvin who, following his example immediately, converted it into a safe-deposit box.

Day felt a slight movement against his leg as though some mysterious hand were endeavoring to withdraw his money. He quickly pulled out a roll of bills and found it coated with gray dust. The bills toward the centre of the roll were still unharmed, and he hastily thrust them into his leather pocket book, noting as he did so that the edges of some of the papers which it contained had crumbled to dust. He thrust the pocket book into an inner pocket and buttoned up his coat.

The train drew into the terminus and a crowd of excited passengers flocked past the smoking compartment toward the door of the car, noisily discussing the strange disappearance of every scrap of paper in the car, some of them loudly lamenting the loss of their money.

When the train stopped at the station, the crowd, with a rush, surged out upon the platform. Brennan disappeared in the midst of the melee. Day and Garvin, picking up their bags, followed the crowd.

As he passed the parcel office, Day noticed among the bags and suit cases neat piles of food, clothing, and miscellaneous articles lying upon the shelves, their protective covering eaten away. Smudges of dust near the handles of the grips showed where the paper tags had been. The express office was surrounded by a crowd of excited people, demanding that parcels which they had left there be returned to them. Inside, the clerks stood in bewilderment amidst a chaos of dust-covered goods trying to explain that it was impossible to identify any of the parcels, and that the goods could not be delivered until matters were some way straightened out. As Day stood in the doorway the manager came out of an inner office and announced that it would be necessary to close the office temporarily. Day moved away as the crowd surged forward with an angry murmur.

Garvin had disappeared. Day remembered that he had seen him hurry through the station ahead of him, his one rubber shoe with its bulky load of bills giving him a ludicrous, lop-sided appearance. He had seemed to be in a terrible hurry. Suddenly the thought flew into Day's head that there was need for hurry. His office records and the formulas of his business! Were they merely gray dust? He rushed to a telephone booth.

He jerked off the receiver and waited for Central. The line was dead. Frantically he pumped the receiver-hook up and down. Nothing but a jangle of metallic sounds.

He hurried out of the station. Outside stood a long line of street cars. People were standing about aimlessly, gazing at the empty cars, fear and wonderment written upon their faces. A motorman explained the tie-up. "They use paper in some of the insulation material," he declared. "Insulation is gone and everything's short-circuited. It will take a long time to make the repairs."

"Anyway," he added as an after-thought, "there'd be nothing doing. Our tickets and transfers are all gone flooey, and the company wouldn't run cars without they could collect fares."

Nothing to it but a walk, decided Day, and set out for his office at a brisk pace. At almost every street corner were piles of the horrible gray dust which meant no newspapers—and a civic election scheduled for the next day.

Out of breath and already discouraged by the strange sights and bewildered, frightened-looking crowds he had met upon the way, Day reached his office building, hoping against hope that the unseen menace might have passed by the particular suite which contained the essentials of his business. But he discovered that some careless clerk had left a window open the night previous and the same faint odor which he had first noticed on the train assailed his nostrils as he entered. A pile of gray dust was all that remained on his desk of the week's mail—orders, cheques and drafts all gone forever.

He hastily closed the window, then, striding over to the corner, he pulled out his chart case filled with the precious plans of a new plant which he was erecting. A cloud of dust drove him back choking.

An examination of his valuable technical library and his ledgers showed that the tightly packed mass had prevented the gas from taking effect beyond the edges and to the depth of half an inch or so. Though badly damaged they were not yet utterly destroyed. But how long could they withstand the insidious effects of this unseen destructive agent? How long would the gas cling to the city? If a wind would only come up it might be cleared away in a few minutes, but Day, gazing moodily out of the window, noted that the steady downpour of fine, drizzling rain showed no sign of abatement.

For a moment he had a crazy idea that he might take a newspaper and clear the office of the gas by fanning it away. Then he realized that very probably there wasn't such a thing as a newspaper left within miles.

This brought his thoughts back with a snap to the general destruction being wrought throughout the city. What of the banks?—the papers and documents upon which depended the whole machinery of commerce?—the money?

Putting on his hat, Day hurried downstairs and rushed to the bank a block away. He was startled to find it in the throes of a panic. Frantic depositors crowded around the door, fighting to get inside. Joining the crowd, Day pushed and jostled until at length he found himself in the densely-crowded interior, in a melee of shouting and frantically gesticulating men and women. Most of them were calling for their money or demanding access to their safety deposit boxes, refusing to listen to the pleadings of the bank officials who were trying to force a way through the crowd, pleading with them to be calm, to exercise patience, explaining that to open the door of the vaults meant the loss of millions in securities, pointing to the little heaps of dust within the tellers' cages which but a short time before had represented hundreds and thousands of dollars in currency, brought out of the vaults in the early morning. Others in the crowd, but a small minority, raised an opposition chorus. They shouted to the bank officials, urging them not to yield, to keep the safety deposit vaults closed until the danger was past.

These latter only served to augment the clamor and added not a little to the general confusion by reason of the fact that their attitude was resented by a panic-crazed majority, some of whom carried their resentment to the point of physical violence, and several miniature battles were staged before Day's eyes. A few policemen scattered through the crowd suppressed these brief outbreaks of absolute lawlessness.

Day found himself crushed up against a little wizened-up man, who watched the turmoil with evident amusement. He rubbed the palms of his hands together and chuckled continuously, his face twisted into a weird grin like that of a comic gargoyle.

"Fools!" he chuckled to Day. "Fools! They thought a bank the safe place for their money. Some people said I was crazy because I kept my securities at home instead of shutting them up in a bank vault. Now look at them, the fools!"

"Well, I trust your securities are in some air-tight place," said Day, "otherwise they are merely dust by this time."

With a horrible scream the little man suddenly darted away from Day's side and began fighting his way towards the door.

"Let me out!" he yelled. "Let me out, you fools!" In some way he managed to force a passage for himself, and Day, taking advantage of the diversion he caused, followed him with the object of gaining the street.

Near the door he came across MacPherson, the assistant manager of the bank, whom he knew. By his side stood Brennan, clutching his arm to prevent the surging of the crowd from parting them, and talking energetically.

"Well, we'll try it, anyway," Day heard him say as he beckoned to a policeman who was jammed in the crowd a few feet away.

"Go with this young man," he instructed the latter, indicating Brennan with a gesture and nodding brusquely to Day as he spoke. "See that he is allowed access to the bank when he returns."

"Can I help?" asked Day.

"Yes," replied MacPherson. "By getting out. We're going to clear the bank."

"If you want to help, come with me," said Brennan.

With the aid of the policeman, they managed to force their way to the street. Once clear of the mob, Brennan set off at a pace which made Day almost trot to keep abreast of him and set the policeman puffing and grunting complainingly.

"Theyre in a hell of a mess," Brennan volunteered "Two of the ledgers are completely gone. Without ledgers, you know, they are going to have a picnic finding out whom to pay money to after this is over. The others are still intact, but they are afraid to open the vaults to put them away so they have them stacked under a rug in the Old Man's office. If this keeps up very much longer the rug won't protect them."

They had reached a large grocery store and Brennan darted inside, Day and the policeman following him.

The store presented a scene of desolation. Gray dust was piled thickly everywhere. One whole wall was a dirty-looking mass of patent breakfast foods mingled with dust. The shelves had evidently been filled with packages which had disintegrated, allowing their contents to fall in an avalanche. A stout man, evidently the proprietor, stood in the midst of the wreckage surveying the scene with a look of amazement still stamped upon his face.

"Paraffin!" shouted Brennan, coming quickly forward. "Have you any?"

"Huh?" muttered the grocer, gazing stupidly at the vast pile of dust-seasoned breakfast food.

"I want paraffin," repeated Brennan. "The kind they use for sealing jellies and stuff like that. Have you any?"

"Lots," declared the grocer, suddenly coming to life.

"Good!" exclaimed Brennan. "I'll take it all."

This appeared to give the grocer another shock. He looked at his prospective customer and gasped.

"All?" he mumbled. "All?"

"Yes, all," stated Brennan.

"All!" echoed Day.

"All!" rumbled the policeman.

The grocer hurried behind the counter and produced a large brick of paraffin, covered with a coating of dust which had once been a paper wrapper.

Brennan turned to the policeman.

"Go, get a taxi," he ordered.

He then hurried to the back of the store and returned with an empty wooden box. The grocer, without a word, began to pile bricks of paraffin into it. When the box was nearly filled, Brennan went back and brought out another. Into the second box, the grocer threw paraffin until it was about half-full.

"That's all I have," he announced.

"How much?" asked Brennan.

The grocer hesitated, apparently both confused and embarrassed. "I forgot to count 'em," he admitted slowly.

"Will ten dollars cover it?" queried Brennan.

"More than cover it, I'm sure," said the grocer. "But hold on! How are you going to pay me? A bill won't last a minute in—"

"Don't worry," interrupted Brennan, "I thought of that."

He produced a handful of silver and placed it upon the counter.

"There's just ten dollars there," he said. "Come on, here's the taxi."

Day helped him to carry out the boxes and place them in the taxicab which had just driven up to the door. In a moment they were off, the policeman, seated on the front seat with the driver, giving the latter the directions. Brennan had carried out the transaction with such a cyclonic rush that Day had not paused to consider the peculiarity of such a wholesale purchase of paraffin. Now his curiosity was aroused.

"What's the idea, anyway?" he asked.

"Did your mother ever make jelly or preserves?" questioned Brennan in return.

"I suppose so."

"Well, did you ever watch the dear old lady at preserving time?"

"Possibly, but I can't remember that I ever did."

"Well, if you ever did you would know what I want the paraffin for. This is going to be a great big preserving bee, and I have a hunch it's going to get me back my job at the bank and—and something else."

They were obliged to stop some distance from the doors of the bank because of the crowd which filled the street. Following Brennan's example, Day shouldered one of the boxes and staggered along in the wake of the big policeman as the latter shouldered his way through the mob. A few words of explanation to one of the blue-coated cordon, which guarded the doors, and they were in the bank. They were immediately led to the manager's private office.

Here, little piles of dust showed where books and documents had been resting before the arrival of the gas. A roaring fire in the big fireplace had converted the room into a huge oven and a number of men, who had apparently been awaiting their arrival, were gasping and wheezing in the hot, gas-laden atmosphere. In one corner an irregular-shaped pile of books was covered with the rug from the centre of the floor. Near the fireplace stood an ordinary tin wash-boiler. Into this, Brennan began to throw the cakes of paraffin without pausing to exchange a single word with any of the occupants of the room. Day noticed that two chains had been hung from the mantle above the fire. In a moment the wash-boiler had been attached to these, and was swinging over the blazing logs.

It seemed to Day but another moment before the boiler was filled with seething, liquid paraffin. Then Brennan, with the assistance of several others, quickly withdrew the precious ledgers from underneath the rug, rapidly tied a piece of twine around each, and dipped them into the molten wax, withdrawing them by means of the string, hermetically sealed—and saved.

The thought struck Day that he might save some of his own books in this way. But after he had fought his way through the crowd outside the bank and found himself hurrying toward his office he realized that the plan was impossible. There was no fireplace in his office and he had no means of melting the paraffin.

He found himself in front of the Stock Exchange. A group of brokers and small speculators stood about the entrance.

"Has this thing affected the market?" he inquired of one broker with whom he was acquainted.

"Affected it!" echoed the broker. "Do you think we transact our business with stone tablets? Every bit of paper is gone. The Stock Exchange is closed."

He found the Post Office a veritable house of gray dust. Pandemonium reigned. Letters, forms, books, stamps—everything gone. Nothing but dust and chaos.

Day was stunned. The routine of his life was completely disrupted. The wheels of commerce had evidently ceased to revolve. Without paper all trade must necessarily be at a standstill. At the breath of this foul gas, the machine of industry was silent and useless. The whole city lay under its invisible attack, inert, helpless.

What had happened at his home? Had the pretty little suburb escaped? What would he find there? He set off for his house at a brisk walk which developed into a half trot as he reached the outskirts of the city, and he noted with ever-increasing anxiety the gray dust scattered about everywhere.

His wife was out of town and the house had been without an occupant during his absence from the city. Evidently the paper boy had left the paper every day, for upon the verandah in front of the door was a large pile of hideous gray dust.

Once inside the door, Day, with a single passing glance at the now almost unfamiliar hallway, hurried into the living-room to discover the wreck of what had once been a particularly beautiful home.

The books and magazines which had been scattered liberally on tables and shelves had given place to stacks of dust. Day remembered that he had turned one particular magazine down open upon the table, intending to read the conclusion of a certain article upon his return, and he gave a mirthless chuckle, which changed suddenly to a groan, as his eye lifted to the walls of the room. A score or more of valuable water colors and etchings were absolutely ruined. The gas had eaten off the paper backing of the frames and then working between the protecting boards had attacked the pictures. One valuable oil painting too was gone. It had been painted on card-board.

Day dropped upon the nearest chair and stared around him until the scene of havoc wrought by the gas seemed indelibly photographed within his brain. Then he looked up at the ceiling, surprised. Evidently the gas had not yet reached the upper part of the room. For the ceiling was papered, and the paper was still intact. Day knew that the plaster under the paper was cracked and broken. If the gas attacked the paper, the falling plaster would add to the general wreckage. As he watched it, he saw the paper begin to darken. Suddenly, there was a crash.

"That must be an exciting newspaper. It put you to sleep as soon as you started to read it."

Day sat forward in his chair with a jerk. Austin Garvin sat half-reclining upon the padded seat opposite to him, blowing smoke rings. The alert-looking young man was seated at his side. The heavy smoke from a pipe which he was smoking filled the compartment. Garvin had hurled an empty cigarette box at the newspaper which was lying across his knees.

"Wake up, you old sleepy-head!" said Garvin. We'll be in in ten minutes. I have been trying to impress upon this gentleman the value of paper to the community."

The young man beside Garvin yawned "To hell with paper," he said rudely. "It wouldn't worry me if all the paper in the world was destroyed."

Unconsciously, Day's hand flew to his pocket. Not until he felt the reassuring form of the roll of bills which his pocket contained was he completely awake. He frowned severely upon the speaker.

"Young man," he said solemnly, "you are a fool. You haven't the faintest idea of the importance of paper. I have. Believe me, I have!"

Transactions of the Technical Section

THE MICROSCOPE AND ITS RELATION TO THE PULP AND PAPER MILL.*

By I. L. GARTLAND.

In presenting this paper, I shall be happy if I can even partially establish with you gentlemen my own conviction that ultimately the miscroscope will be the most used instrument in the laboratories of the pulp and paper industry.

Probably the best way to make a start at an informal discussion of this subject is to say something about the construction and use of the microscope itself—lenses, accessories, types of instruments, etc. In doing this thing I am, of course, facing the danger of repeating matter with which many of my hearers are quite familiar; but there seems to be no other way around it, and I must ask for the indulgence of those already familiar with this matter.

First the lenses; there are six different types of lenses: (1) Convexo-concave (also called "Meniscus"); (2) Plano-convexo; (3) Double convexo; (4) Double concave; (5) Plano-concave; (6) Concave-convex. The mere names of these lenses are probably a sufficient description, if we remember that convex is bent outward and concave is bent inward.

Now the whole system of building objectives is the intelligent use of one or more of the six varieties of lenses (together with prisms) to accomplish the kind of work for which a given objective is intended. Objectives are named from the extreme range at which they will focus — thus every objective falls somewhere between the 16 mm. objective and the 1.9 mm. oil immersion type.

To understand the work of a microscope better, it will also be well to discuss refraction for a moment: Refraction is, in a simple language, the phenomenon that occurs when a ray of light passes through any transparent medium — the medium "bends" the ray of light. This ability of lenses to bend light rays gives them their magnifying power. There are two fundamental laws of refraction which we would well have in mind in going on with this dicussion:

(1) When a ray of light passes from a denser to a rarer medium, it is refracted (or bent) away from a line drawn perpendicular to the plane which divides the medium—and vice versa.

(2) The sines of the angles of incidence and refraction (that is to say, of the angles which the ray makes with the perpendicular immediately before and after it is refracted) bear a constant ratio to one another in a given substance. This ratio is known as the "index of refraction" for that substance.

A medium in addition to the glass slides must be used for high-power objectives in microscopy. This additional medium (a drop of cedar oil is now almost invariably used) having the same index of refraction as the glass, prevents the light rays from diverging from the normal — gathers them, in other words, at the lowest point of the objective, which is exactly where we want them.

There is an index refraction known as the numerical aperture, which is the index of refraction of the sine of half the aperture.

Convexo lenses are chiefly used in microscopy. The other forms, mentioned above, are used to |make certain modifications in the rays passing through these convexo lenses so as to exact their performance. It is difficult, however, to construct a convex lens so that all the rays of light that pass through it shall come to the same focus. The rays which transverse each peripheral or marginal portion are of shorter focus than those which pass through the central portion. This naturally distorts the image and is technically known as spherical aberration. Another aberration which, when light transverses a convexo lens and the different colors which compose it, do not all come to the same focus, is known as chromatic or color distortion. The correction for this is the exclusion of the marginal rays and it has been found that lenses whose penetration is greater than "their flatness of field" these color fringes are usually present. The correction of both these aberrations is entirely up to the optician, and when purchasing objectives, should be taken into consideration.

The Principal Types of Objectives.

There are two principal types — dry and immersion. In dry objectives, nothing intervenes between the object and the objective except, of course, air. In the immersion objective, however, some liquid medium, such as water or oil, must be placed on the cover glass over the object and make a contact between the cover glass and the objective. The most commonly used objective is the homogeneous oil immersion, the reason for this being, that with objectives of this type, the oil has the same refractive index as the front lens of the objective, (cedar oil for example).

There are also non-achromatic objects in which the color distortion is not corrected and the image produced is usually bordered by a color fringe.

Chromatic objectives are those in which the color distortions are corrected.

Aplanatic objectives are those in which the spherical aberration is corrected.

Apochromatic objectives are those in which three spectral colors combine to one focus instead of two, as with the chromatic.

There are, of course, a number of special objectives such as those with collar corrections, those with shields for paraboloid condensors used with the ultra microscope, and so on.

Kinds of "Oculars."

Of the oculars or eye lenses, there are the ordinary Huygenian eye piece, the compensating and the projecting oculars. Each one, the objective and the ocular magnifying independent, but combined, give us our ultimate visual magnification. It must always be remembered that the objective's function is to magnify the object and the ocular's function is to magnify again what the objective has already magnified.

Best Sources Of Light.

While on the subject of light, (a sadly neglected necessary), a further word may not be amiss: The very best possible light that could be used in microscopy is the reflection from a white cloud. However, if artificial light is necessary, there are two or three very good makes of lamps on the market. The principle, however, is to use just sufficient light to illuminate evenly the object to be viewed, as an excess of light will not only distort the object, but will flood the objective so much that it is sometimes impossible even to view the object. It is wise to use a filter on the iris diaphragm or at the front point of the lamp for eliminating the intense rays of the filament of the ordinary bulb. Usually a round blue glass accompanies all microscopes and should be used as much as possible.

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* Paper read at the annual meeting of the Technical Section, Jan. 19, 1920. Slightly abbreviated by the Editor.

Microscopic Accessories:

There are, I believe, some important accessories which are quite unfamiliar to the average chemist and which, sometimes, are of a great deal of assistance in short cutting and eliminating unnecessary work. For instance, the dissecting-scope. This is an excellent accessory for surface investigations of coated papers and is also of very much assistance in teasing out fibres preparatory to staining and mounting. The stage of the dissecting-scope is also excellent for mounting, as it is usually of glass and balsam or Ferrant's medium and is very readily removed.

The camera lucida is a very economical, but sometimes tedious methods of keeping records of microscopic slides. It consists of a prism which is silvered on one plane in the center of which is a small hole. The silvered section of this prism is on an angle so that it reflects through the medium of a mirror at the right, the pencil point ten inches below the eyepoint and through an optional illusion it combines with the visual transmission of the object, thus enabling the operator to outline on the paper below the mirror, the object which he sees through this small opening. This is also an excellent instrument for measuring objects.

Abbe condensers are quite frequently neglected and their relationship to the better definition of the object to be viewed often forgotten. Most microscopes having Abbe condensers are fitted so that it is possible to adjust these condensers and raise or lower them so that the cone of light on the object will be either increased or diminished. The iris diaphragm should be about 2/3 the diameter of the field when looking down the tube, with the ocular removed. If this rule is followed, a great deal of unnecessary changing of lights, etc. will be avoided.

Permanent and Temporary Mounting:

A very serious problem has been to distinguish between what should be permanently mounted and what should be temporarily mounted. In the past the objection to permanent mounts was the waste of both cover glasses and slides and frequently specimens which were only temporarily mounted spoiled. It has been found, however, that the most anything that is worth while can be mounted in a permanent form. And, if, at a later date, the slide becomes useless, it can be cleaned with a solution which will save not only the slide but the cover glass. The formula for this is 50 c. c. of water, 45 c. c. of ethyl alcohol and 5 c. c. of ammonia. By using a staining dish and immersing slides to be cleaned in this solution for about one week or ten days, the mounting medium is entirely removed and the slide and cover glass need only be washed with cold water.

There is still another method of mounting permanently and that is with shellac, or gold size and the use of a turn table. This is especially good for mounting permanent slides of microchemical compounds and the cell in which the mount is to be made can be regulated at the will of the microscopist.

Manipulation:

Before passing on to the subject of the use of the microscope in the paper mill, it might be well to mention a few things in regard to the general manipulation of this instrument. When balsam oil drops on the stage, it is advisable to remove it as quickly as possible and a little Xylol is excellent for this purpose. In using an oil immersion lense, it should always be wiped immediately after the immersion has been performed with lense paper. No other oil but regular cedar oil manufactured for immersion purposes should be used.

In attaching a mechanical stage, frequently in the laboratory it is merely adjusted to the scope stage and let go at that, the result being that the stage will sometimes work more easily in one direction than in the other, or it will not work at all. This is overcome by placing a very thin piece of cardboard on the stage and then clamping down the mechanical stage; on removing the cardboard, a space is supplied wherein the stage easily works in both directions.

Quite often the use of the micrometer in measuring fibre length is necessary. Aside from its inconvenience, the simplest and most satisfactory form is the stage and ocular micrometer combination. Many chemists are opposed to this method because they cannot readily find the lines on the stage micrometer. If, in the use of this, a little ink is rubbed horizontally across the slides on both sides and let dry, it finds its way into the grooves of the etching and the lines become perceptible.

Standard Slides.

Properly and intelligently to analyze the microscopic structures of celluolse, silicious, earth, metals, etc. a standard set of slides should be on hand. These may be purchased already prepared, as for example, the accompanying arrangement of diatoms made by Bausch & Lomb, or the microscopist himself may make them. This is far to be preferred, for in the making of slides one becomes more accustomed to the character of the substances being prepared, familiarizing himself with the structure, etc. more so than if purchased slides were merely looked at.

In the wood room of a paper or pulp mill, one will find the greatest variety of woods from which to make one's own slides and it is hardly necessary to purchase standard slides with this material available. This is accomplished by obtaining a section of wood about 5'' x 10'', or thereabouts, and with an ordinary carpenter's plane, shavings can be had both longitudinally and perpendicularly. It is better, in choosing specimens, to take the ends of these shavings as the sections are then much thinner and therefore more transparent. It is often difficult, particularly with cedars, to get a transverse section and it might be necessary to make a bias cut. This should be noted on the slide.

The most satisfactory permanent method of mounting these cross and longitudinal sections is with the aid of the turn table and the making of cement rings, in other words an air dry mount. The reason for this is that balsam has a tendency eventually to dissolve the cellulose contents in these cross sections and Ferrant's medium is extremely difficult to obtain.

Sometimes it is necessary to permanently mount cross sections of stems of different trees and plants. This is very easily accomplished by the use of a hand microtome and an ordinary razor. A small piece of the stem, say one inch long is imbedded in the microtome with liquid paraffine and allowed to harden. It is simply a matter of shaving off the finest possible section obtainable. In this way the structure and sometimes the storage granules may be seen.

Microscopic Analysis of Paper.

All of us are, no doubt, familiar with the general course of procedure in the microscopic analysis of paper, so it is, I believe, not necessary to go into detail along these lines. There are one or two hints which might be of great interest to the chemist and that is the application of reagents and stains.

It is wise when your specimen is ready to be stained, to lay the cover glass over it and, taking a drop of reagent on a glass tube, place it on the outer edge of the cover glass. It will then irrigate to the centre and completely stain the object. This have saved a great deal of trouble and often avoided the entire loss of the specimen.

Another suggestion is, in the disintegration of the pulpy mass, it has been customary to shake the test tube containing these ingredients by hand, but a physician's centrifugal urine apparatus has been found very satisfactory and as many as six samples of different kinds of pulp can be shaken at once, again saving considerable time.

Chemical Microscopy.

In the preface of Professor Chamot's work “Elementary Chemical Microscopy,” he writes: “The failure of the chemists to obtain from the microscope all that the instrument is capable of yielding is perhaps largely due, first to the fact that few of them are given an opportunity of becoming sufficiently familiar with that instrument and its accessories and second, they are not aware of the great variety of problems which are solvable through the microscope nor of the specific sort of problems for the investigation of which this is the instrument par excellence. Third, there has been a lack of elementary manuals covering the field and for this reason the microscope has been looked upon as an instrument peculiar to the biological laboratory.

Principles of Chemical Microscopy.

As the fundamental principles of chemical microscopy are crystals and indeed the most interesing, I believe they are worth while presenting as a basis for discussion. There are unlimited possibilities for their use in the paper industry, as frequently the samples of some specially treated paper are too small to make an elaborate chemical analysis and the possibilities are that when this field is thoroughly covered, unnecessary work and inconvenience will be entirely eliminated by making the chemical analysis of a sheet paper under the microscope.

At the present time, unfortunately, our source of reference is very much limited. Emil Chamot has produced, so far as I can find, one of the best up-to-date works on Chemical Microscopy and it is my intention to try and interest you in this subject.

Photomicrography.

There are some things which present themselves in our daily laboratory procedure which impress us. These things are more or less imprinted on our minds and when occasion presents itself may be put into use through the recalling of such and such a circumstance.

The Construction Department, for instance, make it their business to record (by the use of the camera) certain developments in the progress of a building. This is done so that it may aid the engineering force in future work.

And so by combining the camera with the microscope, we could record infallibly, exact resultant developments. The mode of procedure is simple and patience the greatest asset. The camera I have used taking microphotographs was a Graflex 8 x 10, the microscope and Seibert (which is equal to Leitz A 1 type) with an objective No. 3 (American equivalent 1/8 inch). For illumination a gas filled 220 volt 110 watt bulb and a bull's-eye condenser were employed. This was done so that the light may not only be concentrated, but the color distortion caused by the filaments eliminated. The average time and exposure was 30 seconds. In one instance the cross section, which was stained with “Eosine”, a red filter was used, but in the chemicals, filter No. “H” (Blue) was used. There was lack of detail in construction and the cell walls were so indistinct. This serves to illustrate what would happen if the sample of cellulose was stained with Herzberg stain and if a large percentage of cotton, linen or hemp were present and a red filter used.

With the same cross section but a green filter the difference is certainly apparent. In using the Herzberg stain and photographing after it has been applied to the pulp, care should be taken in the choosing of filters as too much contrast should not be obtained, or a result will be a choking of shadows with the loss of detail, as in the instance of the cross section stained with Eosine. Fundamentally, we have with the application of the Herzberg stain, four prominent colors; red, blue, yellow and violet. Between blue and violet there is liable to be a slight difference and consideration must be made in the choosing of filters for photographing after staining. For instance, it may be necessary to combine filters, based, of course, on their spectral wave lengths. Hence in photographing violet filters D & H with a dominant wave length of 4,500, may be used; or for blue, filters C & H with a wave length of 4,800, or for yellow, filters B & G with a wave length of 5,500 and with red filter “F” with a wave length of 6,250. By dividing filters into pairs, the spectrum is divided into approximately monochromatic portions and as a general rule, when contrast is required for blue use a red filter, for green, red and for red, green, for yellow, blue and for violet, yellow. It is impossible, however, to lay down any laws regarding the use of filters and the operator must use his own judgment after a visual inspection of what should be photographed.

(To be concluded with comment by H. N. Lee.)

HOWARD SMITH PAPER MILLS, LIMITED, ARE OPTIMISTS, N.B.—

When you get right down to facts, business in Canada is not bad—only a little harder to get.

Imports into Canada are increasing month by month, which shows that the demand for goods is active.

If the Canadian manufacturer gets after business in his home market with energy and enthusiasm, imports will be checked and Canadian business stimulated.

A new daily paper, established in Boston, and called the Boston “Telegram”, made its appearance last week. It is an evening paper and sells for the old pre-war price of one cent per copy.

News From Europe

The Paper Market in Norway.

The falling off in prices has had little effect, the market has received a fillip, but that is about all. This is perhaps as well. The future may conceivably possess all the virtues attributed to it by optimists, but the fact remains that buying can only commence in a satisfactory measure when the "price ideas of sellers and consumers meet." Apparently the prospect of a more active market is not so remote as it was. Feelers are being put out from various quarters, and some paper makers have purchased considerable amounts of pulp to meet their contract requirements. The truth seems to be that, the market having been unduly depressed by lack of confidence, is likely to appreciate sharply again.—Papir-Journalen, January 29 and February 19, 1921.

Pulpwood Supply of Europe.

Perhaps the most satisfactory feature of the past month in the paper trade of Europe is the exploitation of timber and the distribution of pulp-woods in countries where the laggard development of industry is one of the inevitable consequences of the war. Among other causes of this exploitation is the almost complete absence of American supplies from the markets. The explanation generally accepted is as follows: "From the American point of view, the timber trade with France, Belgium and Holland has virtually stopped. Dealers in both of the countries first named regard American prices as exorbitant, and the mills are assisting each other with substitutes. For instance in France and Belgium native ash is preferred. French ash costs about 500 francs a cubic meter, as compared with 1,000 francs for the American variety. In Belgium, ash from Germany and Austria is in good demand. Attempts have also been made to introduce Douglas fir in Belgium as a substitute for pine. Holland, taking advantage of exchange, has imported large quantities of standard sizes from Germany and Austria. Within the past month Lithuania has reappeared as a source of pulpwoods. In Poland conditions continue very obscure. The railways are in need of cars, locomotives, and, above all, repair shops with the skilled labor necessary.—Holz-Welt, December 17, 1920.

Restoration of French Forests—Turn in Prices.

While the forest industries in Europe generally, and even in Austria, appear to be making rapid strides, the latest reports disclose an unsatisfactory state of affairs in France. "The attention of the Committee of the Forest Society is drawn to the lamentable condition of the forests and shrubs in the zone of military operations, in most of which nothing has yet been done to restore the soil to its normal state. The work required consists in cleaning and levelling the ground, removing the wire fences, filling up trenches, excavations, planting, etc."—Le Bois, March 3, 1921.

In connection with prices there is one point which traders should particularly notice. There are certain sizes which have a ready sale, such as 2 x 7, 2½ x 7, 2 x 4, 2 x 3. For 7-inch battens the spot prices may be said to be about 35 to 36 pounds for unassorted red wood. Shippers who endeavor to place large quantities of 6½, 4½, and 5-inch sizes must expect a heavy reduction in price. These dimensions probably account for the high quotations of imported timber on the French and British markets.—Affarsvarlden, February 23, 1921.

The Central Association of Finnish Timber Industries has just issued a report on the economic aspects of the privately owned and companies' forests. Pine predominates on both; pine and fir cover 78 per cent of the companies' holdings and 73 per cent of the private lands. The proportion which the number of deciduous trees on the companies' land bears to those on the private estates is, however, much smaller. But in all that relates to renewal of timber, cutting, and thinning, the value of industrial exploitation is conspicuous.—Finsk Pappers—Och Travarutidskrift. December 31, 1920.

These various reports agree in one particular of no little importance to the paper industry at large, that in the present condition of Europe Germany occupies a relatively favorable position, which may lead to a corresponding development of paper making in that country.

Higher Postal Rates in Germany.

A protest is being made against the Government's proposal to meet the billion mark deficit of the Post Office by raising the rates. The memorial is signed by 55 different trade associations. It is pointed out that the last increase in rates failed utterly to produce the revenue desired. There is not the slightest reason for imposing this additional tax on newspapers and periodicals. One industry—the picture post-card—has been almost entirely ruined. As a matter of fact our industries need a lower postal rate, and it is fairly obvious that business would be increased thereby.—Papier-Market, March, 1921.

Canadian Mill Seen in Norway.

The meeting on February 1, had a special interest, for it was marked by a scenic display, or in ordinary prose, a cinema in which the plant and processes of the Kipawa mills were shown on the film. Mr. C. B. Thorne, Vice President of the Riordon Company, Ltd., and Mr. O. L. Berger, of the G. D. Jenssen Company, were present. Papers on the "Labor Situation in the English Industry" were read by Mr. N. W. Rogstad. Perhaps even more than any others are the Canadian mills objects of interest and admiration; certainly the fact that the films were also displayed in a theatre is an unmistakable sign of the curiosity with which Europeans regard undertakings on a scale larger than that to which they are accustomed.—Papir-Journalen, February 19, 1921.

Polish Paper Situation.

Poland is just now passing through a paper crisis, reports Trade Commissioner Louis E. Van Norman. A carload of poor quality paper which before the war cost about 2,000 marks now costs 500,000 marks. A carload of vellum paper that previously cast 5,000 marks is hard to get now at 1,000,000 marks. The publishing of books is almost at a standstill, even schoolbooks being a luxury.

The minimum production for local consumption should be at least 30 carloads of cellulose per day. The only Polish factory for cellulose, in Wloclawek, produced 7 carloads per day before the war, and Finland supplies the rest. Today, England is importing most of what Finland manufactures, and the factory at Wloclawek produces only 5 carloads daily.

Before the war this factory belonged to German capitalists, and it is now owned by "the paper company of Robert Saenger in Pabianice." Its cellulose is distributed among paper factories in Wloclawek, Pabianice, Myszkowice, Czestochowa, and a few smaller factories.

Belgian Paper Industry in 1920

(Special contribution to Pulp and Paper Magazine.)

1919 was a quite abnormal year owing to the general disturbance of Belgian industries, as a result of the deportation of machinery and raw materials during the German occupation. It was not until the second half of the year that the paper industry was in a position to meet on a more or less normal way, the increasing demands of the domestic market.

On account of this situation exports were relatively low. They amounted for 1920 to 40 per cent. to 50 per cent. of those of 1913.

The total production of board and paper amounted for the same year to about 130,000 tons, being 25 to 30 per cent. more than in the immediate years before the war. It is noteworthy that this higher production was obtained with less machines than in said years, which may be explained chiefly by the fact that because of brisk demand, mills were constantly dominating the situation and could arbitrarily impose such conditions with regard to size, substance and smallest quantity, as to suit best the requirements of their respective machines.

The activity grew more and more intense, till the middle of the year. Increase of foreign rates of exchange, and consequently of the cost of pulp and of other raw materials, higher wages were followed step by step by advances of paper prices without discouraging buyers, inducing them rather to cover their needs by ample supplies, in order to anticipate further possible rises.

Is it to be wondered, that in such conditions stocks soon grew larger than they reasonably ought to have been? That in more than one sound business, transactions degenerated in speculative operations, with all their temptations, but also with all their dangers?

As soon as the wage reduction was announced from America, purchasers got hesitating and refrained from buying. Mills took the matter up calmly, partly because they considered this abstinence as a temporary caprice, as a regular feature of holiday seasons, but chiefly because most of them were behind with their deliveries and had orders on their books for several months.

Another factor, to which till then too little importance had been attached, viz., the German competition, began to alarm buyers and to unsettle the market. German offers were overflowing the country in August at prices—reported at that time in "Pulp and Paper" —about 40 per cent. under the current prices.

To what degree they met with success is shown in the following:

Imports of paper and board for 1920 aggregated 29,126,288, of which 31.6 per cent. came from Germany, 28.8 per cent. from Holland, 14.8 per cent. from Great Britain, 3.2 per cent. from Norway, 7.3 per cent. from Sweden, and 14.3 from other countries, increasing from 37 per cent. to 59 per cent. of the total from September to December.

Orders passed for a great deal into German hands. From that moment it was impossible to liquidate accumulated stocks, under conditions which may have safeguarded , to some extent, the mutual interests of the parties concerned, and all efforts, even at serious sacrifice, to realize a revival of the trade proved vain. After having been working for several weeks at short time, mills started in December to shut down part or all of their machines for an indefinite period. At pre-

Imports and Exports 1919-1920.

NEWSPRINT (DUTIABLE)

	(Origin) Imports.		(Destination) Exports.	
	1919	1920	1919	1920.
China				127.082
France				352.813
Germany		1.381.648		
Gt. Brit:	1.102.361			
Holland	6.217.206	3.584.223		
Othr. Ctrs:	816.844	441.041	99.801	480.769
Total Kg.	8.136.411	5.406.912	99.801	960.669
Value F.c.s	8.025.547	9.895.140	150.527	2.499.036

NON DENOMINATED PAPERS (DUTIABLE)

Argentine				399.884
Australia				297.480
Brazil				294.734
Brit: India				734.106
Germany	1.288.472	5.367.316		
Gt. Brit:	2.617.712	2.841.476	1.799.406	5.286.238
France	1.000.161	1.735.772	580.195	10.096.828
Holland	3.299.399	2.367.538	340.259	1.711.638
Norway	637.981	661.083		
Sweden	1.157.445	1.625.102		
Switzld:				316.485
Utd: States				767.170
Othr. Ctrs:	325.747	899.581	754.780	3.351.606
Total Kg.	10.326.917	15.487.867	3.474.640	23.563.669
Value F.c.s	18.900.897	42.795.260	10.291.652	78.079.011

WOOD PULP. (FREE).

	(Origin) Imports.		(Destination) Exports.	
	1919	1920	1919	1920
anada		1.618.388		
Finland		5.661.958		
France			1.206.962	14.710.281
Germany	416.372	1.997.799		
Holland	4.447.987	1.490.247		
Norway	23.072.578	51.194.361		
Sweden	20.777.860	50.995.705		
Othr. Ctrs.	6.291.904	1.573.257	151.831	971.422
Total Kg.	54.978.061	114.531.715	1.445.113	15.681.703
Value Fcs.	37.264.444	153.612.544	1.413.562	22.585.631

WALLPAPER (DUTIABLE).

France	482.753	583.231	330.037	1.552.991
Germany	191.996	487.516		
Gt. Brit:	1.416.019	778.171		
Othr. Ctrs.	168.438	153.538	199.251	707.626
Total Kg.	1.889.206	2.003.500	529.288	2.240.617
Value Fcs.	5.307.416	8.389.608	1.967.395	8.941.948

BOARD. (DUTIABLE).

Finland		395.240		
France				629.456
Germany		1.938.315		
Gt. Brit:	729.703	679.848		315.120
Holland	2,990.000	2.265.168		
Sweden	536.932	322.497		
Othr. Ctrs:	258.188	626.941	52.075	105.446
Total Kg.	4.514.823	6.228.009	62.075	1.049.021
Value Fcs.	4.641.493	10.119.126	62.431	2.101.306

Summary of Imports and Exports.

IMPORTS.

			(Increase %)	
	Quantity Kg.	Value Fcs.	Quantity	Value.
		Wood Pulp.		
1919	64.978.061	37.264.444		
1920	114.531.715	153.612.544	108	312
		Board and Paper.		
1919	24.867.357	36.875.353		
1920	29.126.288	71.199.134	17	93

EXPORTS.

			(Increase %)	
	Quantity Kg.	Value Fcs.	Quantity	Value.
		Wood Pulp.		
1919	1.445.113	1.413.562		
1920	15.681.703	22.585.631	1054	1497
		Board and Paper.		
1919	4.165.804	12.467.007		
1920	27.813.976	91.621.301	569	634

sent more than 50 per cent. of the 94 paper and board machines are inactive. Employees are kept at work on repairs and upkeep, so that they may be available in case the depression should come unexpectedly to an end.

That mills are anxiously looking out for this moment will be easily understood, if one considers that most of them are handicapped by large stocks of pulp, purchased at high prices, that several mills have still to take delivery of lots contracted for months ago, and that in the meantime paper prices are continually going down, and have attained at present a level far below the cost price of the pulp.

Prices are today about as follows, per kg. at the mill: Straw board, 0.75 fr; brown wrapping, 1.95 fr.; kraft, 2.10 fr.; ordinary wrapping, 2.10 fr.; strong sulphite, 2.60 fr.; butchers' imitation parchment, 2.50 fr.; bleached, 3.40 fr.; grease proof, 2.90 to 3.70 fr.; newsprint, 1.65 fr.; ordinary printing, 2.25 fr.; woodfree printing, 3.25 fr.; vegetable parchment, 5.25 fr.

The impression is reigning that these prices will still go back. Notwithstanding repeated and important reductions granted these last months, few transactions are being made, and orders are only passed on condition of immediate delivery.

It is clear that in the conditions explained, the pulp market is more than quiet. No transactions at all are being made and there are no regular prices, as these also are continually going down.

Quotations were these last days about as follows, per 100 kg., f.o.b. Antwerp: Bleached sulphite 240 frs.; easy bleaching, 210 frs.; strong sulphite, 190 to 200 frs.; kraft, 150 to 160 frs.; mechanical, 120 to 130 frs.

The market in the other materials is somewhat better, although purchases are only made in very limited quantities: Sulpate of alumina is quoted 80 fr. per 100 kg.; rosin, 125 fr. per 100 kg.; rags, 65 fr. for common, up to 350 fr. per 100 kg. for the better sorts.

A NEW AMERICAN CLAY FOR LOADING PAPER.

A highly colloidal clay which exists in large deposits in the intermountain region of the United States has been found by the U. S. Forest Products Laboratory to be valuable as a loading material for giving finish and printing qualities to book paper. When this clay is used in conjunction with English China clay, the retention of the English clay is materially increased, and the paper produced has a superior finish and appearance and a more velvety feel. The admixture of this clay similarly improves the retention of other fillers, and is especially desirable with some which have a low retention.

The ability of the new clay to remain in suspension may make feasible the installation in paper mills of a central mixing plant, from which the loading material can be piped a considerable distance to the beaters, without danger of settling or clogging of the pipe lines, and with the assurance that the concentration will remain uniform. The properties and use of the new loading material are more fully described in a report which may be obtained from the laboratory on request.

It costs a man to live today much more than it cost yesterday, but don't you think it's worth it ?

It takes a strong man to keep his face closed.

SUCCESSFUL TRACTOR TEST ON TIMBER.

The St. Maurice Paper Co. of Cap Madeleine, P. Q., have recently completed a test of Tractor Efficiency in the movement of logs—at their operations carried on at St. Donat—which is located 35 miles north of St. Agathe des Monts, Quebec.

The test was carried on over woods roads—newly opened this season—and over a governing grade of 18 per cent. It was found possible to continually haul three trailers over this four mile route, and move 180 logs on each trip, and, with a minimum of four round trips each day, a total of 720 logs a day, and by the same schedule 4,320 logs per week. It is estimated that with one tractor and three trailers to each train (9 trailers in all) one of these tractors can accomplish the work of 12 teams. The trailers used were not special equipment but were built complete by the St. Maurice Paper Co. in their blacksmith shop at St. Donat. They are of the conventional type of heavy duty sled as manufactured by the Adams Wagon Co. at Woodstock, with but slight changes made for purpose of proper tracking with tractor on curves.

Linn Tractor as operated on the Test.

During the entire test the tractor was operated by an employe of the St. Mauriee Paper Co. The machine used in this test was developed in the timber hauling business in the Catskill mountains and is probably the only heavy duty tractor developed purely to meet requirements of the timber producer. The St. Maurice Paper Company have placed an initial order for one of these machines.

NEW MEMBERS OF TECHNICAL SECTION.

Members of the Technical Section of the Canadian Pulp and Paper Association will be glad to know that R. W. Sterns, Abitibi Co., Iroquois Falls, Ont., and H. M. Lewis, of Provincial Paper Mills, Port Arthur, Ont., have been elected members of this Section.

A French Scientist states that the process followed in making paper does not eliminate micro-organisms. Living micro-organisms were found in Chinese MSS. 1,000 years old and in a piece of Egyptian papyrus more than 2,000 years old. These minute beings can rest immobile for 20 centuries apparently dead, but after immersion in sterilized water for 3 hours start wriggling as if newly come to life.

The paper mill at Sandford-on-Thames has been closed down and as a consequence over 100 employees have been thrown out of work. It is stated that all orders have been cancelled, the reason for the slump being that German mills have been sending paper into the country which undercut in prices the home product.

Some of the pulp mills are stopped in Sweden owing to the workers' strike.

British Trade News

(From Our London Correspondent.)

London, March 15, 1920.—Last month I commented on the attacks that were being made on Imperial Government Departments, by anti-waste advocates, in regard to expenditure on paper supplies. This week a concrete case has been given by the Government Stationery Office of what this Department has been doing and it is a nice set-back for the anti-wasters, who are always complaining of the cost of paper. The case was quoted in the House of Commons by Mr. Baldwin, who said that the total stocks of paper held by the Stationery Office were: January, 1914, 3,625 tons valued at £118,320; January, 1921, 7,700 tons valued at £639,000. He had no reason to believe that the purchase of paper by the Stationery Office had at any time a material effect on the advance of prices of paper. The office did not buy much paper at the high prices ruling in 1920, as since the Armistice the department had been living to a great extent on surplus war stocks and no Government control existed over paper mills in the United Kingdom. The inference to be drawn is, because contracts were given out to paper mills the anti-wasters thought the Government had some control over them, but the bubble is now pricked.

The Paper Situation.

There is no change in the paper market to announce, everything being dull and buyers standing aloof.

Sir Charles Eves, addressing the shareholders of the "Illustrated London News" and "Sketch," two pictorial papers printed on fine art and other high-class papers, said the cost of paper, which during 1919 had risen to what appeared then nearly the breaking point, had still further increased and during the latter months of the period under review it was between 30 per cent and 40 per cent higher than in the corresponding months of the previous year. The net result was a loss in trading profit and no dividend would be paid. With the return to more normal conditions—with a reduction in the price of paper, which was now in prospect and with a reduction in wages, he could not help thinking that there were very much better times in front of the papers.

As a result of high expenses the Leicester "Daily Post" ceases publication at the end of March. It was established in 1872. This is the third of England's oldest newspapers to close down since the new year and it shows how newsprint sellers and newspaper owners are being hit just now.

George Newnes, Ltd., and C. Arthur Pearson, Ltd., two of London's publishers whose names are worldwide, are amalgamating. The merging of these firms show how the publishing firms are being taxed and the high cost of production.

Swedish and Canadian papers are looked upon just now as very fair competitors with the home production. In some of the provincial newspapers I see a good share of Canadian newsprint. Makers of sulphite printing paper have agreed between themselves not to alter the present prices until April 30, when they will come up for revision. Reports from Norway and Sweden, however, say the market is steadier.

The Pulp Market.

The pulp market is also in a state of despondency and although sellers are prepared to meet buyers on reasonable grounds the dullness of the paper industry prevents business being done.

The imports of ground wood in tons for February last have been as follows: From Sweden, 105; Norway, 22,994; Canada, 90.

The total quantities of ground wood reached 23,189 tons in February, and the total for January-February is 51,342 tons, compared with 51,075 tons in 1920, the values being respectively £679,310 and £470,260.

In these figures the depression that has prevailed in the paper industry is keenly reflected.

Turning to chemical pulps the imports in tons were as follows:

	Bleached Sulphite.		Unbleached Sulphite.	
	Feb.	Jan.-Feb.	Feb.	Jan.-Feb.
Finland..	1	1	927	1,028
Sweden..	..	99	2,052	14,086
Norway	1,413	2,884	3,150	6,441
Germany	2	140	482	990
Other places....	139	205	195	732

The imports of sulphite for January and February reached 3,389 tons, valued at £213,843, as against 6,443 tons in 1920, valued at £230,645. Unbleached imports 23,277 tons, valued at £1,025,164, compared with 80,615 tons in 1920 at £2,088,360. The supplies from "other places" include Canada.

Newsprint and Other Imports.

There is a falling-off in Canadian supplies of newsprint to the British market and this is much to be regretted (particularly when one considers the imports from Germany and Scandinavia). The imports reached 4,920 cwts., valued at £14,377, as against 36,748 cwts. valued at £57,130 for the corresponding period—that is January and February—in 1920.

The supplies from all sources of newsprint and writing paper in cwts. for February in 1920 and 1921, respectively, were as follows: Sweden, 35,755 and 59,-619; Norway, 58,701 and 10,110; Germany, 290 and 7,355; Belgium, 719 and 6,566; U.S.A., 2,148 and 65; Canada, 25,043; Other Places, 20,333 and 71,901; totals, 142,989 for 1920 and 155,615 for 1921.

The imports of packing and wrapping paper show a very material reduction of 91,765 cwts. in February, as against 304,906 cwts. for the corresponding period in 1920, the two months supplies reaching 192,419 cwts. for 1921 and 667,952 cwts. in 1920. The countries of supply with imports in cwt. for February, 1920 and 1921 are: Finland, 24,940 and 11,303; Sweden, 132,614 and 31,324; Norway, 99,848 and 12,773; Germany, 8,557 and 22,111; Belgium, 8,536 and 5,084; Canada, 14,865 and 1,610; Other Places, 18,546 and 7,560.

Coated papers also show a reduction in the imports 2,500 cwts. for the two months—9,433 cwts. as against 11,933 cwts. in 1920. Taking the imports and the exports figures of all kinds of paper and boards they are as follows:

	Feb.		Jan.-Feb.	
	1920	1921	1920	1921
Imports, cwts...	853,104	472,572	1,861,932	874,845
Exports, cwt. ..	115,261	130,870	273,680	352,337

It will be seen that the exports of the British mills show a substantial increase and bear out what I have been recently commenting on, viz., that British mills were working up their export and concentrating their attention on it to keep the mills running. The countries to which exports were sent in February were as follows:

	Printing Paper,		Writing Paper,	
	1920	1921	1920	1921
France	6,123	875	2,950	289
U.S.A.·· ·· ·· ·· ·· ··	363	238	79	...
Other Foreign Places··	15,810	11,429	2,715	2,502
B. Sth. Africa·· ·· ··	1,918	9,722	154	876
B. India·· ·· ·· ·· ·· ··	7,814	10,417	3,699	1,696
Sts. Settlements·· ·· ··	872	2,080	273	282
Ceylon·· ·· ·· ·· ·· ··	664	436	97	433
Australia·· ·· ·· ·· ··	2,105	19,642	1,519	2,892
N. Zealand·· ·· ·· ·· ··	480	7,852	455	2,657
Canada·· ·· ·· ···· ··	72	436	4	42
Other British Places··	3,686	3,717	476	1,104
Total cwts···· ·· ··	39,907	66,844	12,421	12,763

A notable feature of the exports is the large increase in millboard, strawboard and cardboard shipments from the United Kingdom. Canada does a big trade with the British market in these lines. The exports during January and February reached 20,202 cwts. as against 5,628 cwts. in the same period of 1920.

The exports are not to say large, numerically, but they are sufficient to show that this section of the trade is being developed.

Finance.

The present situation is squeezing out small agents, in some cases, financially, but manufacturers are in a healthy position generally though the shares of their mills are quoted low at times. The British public have great confidence in the paper mill, as for instance 1,200 £1 (fully paid) shares in the Roach Paper Coy., near Preston, when offered were sold for £1 10s. each.

THE SECRET OF PREVENTING FOREST FIRES.

Mr. Henry Sorgius, manager of the St. Maurice Forest Protective Association of Three Rivers, Que., says:

"I can say that I am more than ever convinced that the chief method to be used in forest protection is a serious campaign of propaganda, and more money should be spent in educating the people to prevent forest fires. Through experience and data obtained by this association since 1912, it is proven that outside of a very small number of fires caused by lightning and fires caused by railway locomotives, all fires could be prevented. It is far more essential to prevent forest fires than to detect and extinguish them. I would suggest that greater effort should be made in educating the people, especially those whose work is in connection with the lumbering operations, also the fisherman and hunter. The settlers in our territory during the past season caused four fires, burning an area of only 19 acres. We have no trouble whatever through this source, and the good results we believe were obtained through the educational efforts carried on by this association since several years. It will be remembered that only a few years ago the settlers were the cause of 100 to 185 fires a year and damaging large areas, and this, we believe, is sufficient proof to show the value of publicity in forest protection."

Few things come to those who wait for others to bring them.

PROGRAM OF THE TECHNICAL ASSOCIATION.

Since the Fall meeting of the Technical Association, eighteen applications for membership have been received. Thirteen of the candidates have been approved by the Executive Committee and admitted to membership, the latest being Gardner C. Derry, manager of the power apparatus department of B. F. Sturtevant Company, Hyde Park, Mass.

Several reports of unusual interest and value will be presented by standing committees. Reference has previously been made to the work of the Committee on Heat, Light and Power, which is planning a symposium on Pulverized Fuel and Steam Economy. The subject of Steam Economy is one that is almost unlimited in its scope. The leading paper in the symposium will deal with certain definite conditions in steam plants and discussions will afterwards be centered on individual problems in different mills. The chairman of this committee is Howard S. Taylor, of the Management Engineering and Developing Company, Dayton, Ohio.

An illustrated paper on water wheel testing, based on the results of twenty years' experience in testing water wheels in the grinder rooms of mills in the United States and Canada, will be presented by a New England expert, who has developed a simple scheme of showing results and indicating methods of operating to insure maximum efficiency.

Will Report on New Groundwood Process.

The Committee on Groundwood or Mechanical Pulp, headed by W. A. Munro, of the Wisconsin River Paper and Pulp Company, has conducted a searching investigation into the merits of the Hall process of grinding wood and a most suggestive and valuable report has been compiled from communications made by users or licensees of the process. The subject has been investigated from three angles, that of the grinder room, paper machine room, and press room. The resistance of paper made from Hall process pulp to strain in turning the angle bars of big newspaper printing presses forms part of the study, the committee being in possession of several interesting letters from the press rooms of the larger dailies.

Individual Papers in Prospect.

Among contributions to the session on scientific papers, one is promised from the Forest Products Laboratory, dealing with a new method of pulping in which the cooking time is shortened by preliminary impregnations. It is certain that contributions of reports and papers wll be up to the high standard set at previous meetings of T.A.P.P.I. A number of individual papers will be presented on such subjects as methods of drying paper on paper machines, the testing of crude rosin, measuring moisture in chips for cooking, facts and figures on power required for paper machines, etc.

Frank Sisson to Direct Entertainment at Banquet.

Arrangement for the annual banquet of the T. A. P. P. I., which is to be held at the Hotel Astor, New York, on Tuesday evening, April 12, are progressing satisfactorily. The entertainment features, musical, recitative, etc., will be in charge of Frank T. E. Sisson, of the Racquet River Paper Company, Pottsdam, N.Y. Mr. Sisson's ability as a musical director received the supreme stamp of approval at the last fall meeting of the association at Saratoga Springs. The entertainment at the annual meeting will not be on the same extensive scale as that given at Saratoga Springs, but it goes without saying that it will be highly enjoyable.

PULP AND PAPER NEWS

Announcement was made in Toronto this week of a new publication to be launched by Findlay I. Weaver, who for ten years was editor and manager of Bookseller and Stationer, put out by the MacLean Publishing Company. The new periodical is to be known as the Canadian Stationer and Book Trades Journal. Mr. Weaver had been a retail bookseller and stationer in Kitchener, Ont., and at one time was a reporter on the staff of the Toronto Mail and Empire.

I. H. Weldon, of the head office at Toronto, of the Provincial Paper Mills, Limited, has gone on a trip to Vancouver and other western points.

Mr. James Thompson, of Thompson & Heyland Company, who are large pulpwood contractors and lumber dealers, are extending their operations to the United States and will handle southern hard woods and pines in the Canadian market in addition to their pulpwood activities.

Mr. James Whalen, the well known pulpwood and lumber men from the west, was in Toronto for a few days last week. Mr. Whalen stated that the proposal of the Robert Dollar steamship interests to take over the British Columbia paper plants, may have a very important bearing on the development of this industry. T. W. McGarry, president of the Whalen Company, is now in British Columbia and is probably in touch with Mr. Dollar in the matter of the proposed arrangement.

Mr. F. Moines, of the Dayton office of the George H. Mead Company, of Dayton, Ohio, and Mr. R. I. Worrell, manager of the pulp sales department of the company, were in Toronto last week.

Plans to end the strike at the Beaver Board plant at Thorold are under way and it is hoped to bring them to a successful conclusion. A conference has been held between the strikers and officials of the company, with the result, it is believed, the strike will be brought to a close within a short time. The strike was called by the International Patternmakers Union because the men claim the Beaver Board Company refused to treat with them as a union in connection with wage adjustment. The strike has already cost an immense amount of money. For a time a hundred Mounted Police were on duty and there are now 22 members of the force there.

Middows, Limited, with a capital stock of $40,000 and head office in Toronto, has been incorporated to carry on business as paper merchants, wholesale stationers, printers, engravers, etc.

Mitchell Brothers Company, Limited, with a capital stock of $50,000 and headquarters in Toronto, has been granted a charter to carry on the business of general manufacturers and dealers in pulp and paper and the products thereof.

A charter has been granted to the Canadian Printing Company, Limited, of Sarnia, Ont., with a capital stock of $40,000, to engage in the printing and publishing business, as well as bookbinding, paper box manufacturer, stationer, etc. Among the incorporators are J. MacAdams, L. M. MacAdams, and Robert MacAdams.

The town of Hawkesbury, Ont., in which is located the large pulp mill of the Riordon Company, is seeking separation from the counties of Prescott and Russell.

B. M. Wyle, formerly crown timber agent for the Port Arthur district, before leaving Port Arthur for Toronto, expressed the opinion that reforesting was a great question for both the people and the Government of the country and said that townships unfitted for agricultural pursuits have been thrown open to settlement, while good agricultural lands have been left untouched by the plough. He feels that the settlers on the poor lands should be removed to the good lands and the land from which they have been trying to make a living, be reforested.

Mr. Bruce D. Clegg, who has been for some time in the pulp and paper machinery department of the Canadian Ingersoll-Rand Co, in Montreal, has been appointed manager of the Vancouver office of the company, 803-4 Birks Bldg., Vancouver, B.C.

Mr. Geo. F. Steele, Manager of the Canadian Export Paper Co. has gone to England on business for the company.

PULP AND PAPER LEAGUE BANQUET.

A very fitting wind-up to a successful season was given by the Pulp and Paper Hockey League last week at the Queen's Hotel, Montreal. One hundred and fifty players and guests assembled in the breakfast room at 7·30 and after a sumptuous repast were entertained by Jimmy Rice, who surpassed himself on this occasion. J. Beauchamp also contributed with songs that were much appreciated. The J. Eckstein orchestra supplied the music.

W. H. Aird, the president of the league was in the chair and in his remarks referred to the keenly-contested and clean hockey games that had been played throughout the season. Canadian Export Paper team well deserved to win, he stated, as they had played consistently throughout the series.

After thanking C. Howard Smith for his kindness in presenting to the league a magnificent cup, he called upon Mr. Smith to present same to the winners.

Mr. Smith in a few remarks praised the winners, saying that it had been his privilege to witness some of the games and was pleased with the good sportsmanship displayed by the different players.

Other presentations took place. Thomas Riddle received a percolator set and Jos. Riddle, a diamond platinum pin in recognition of the capable and efficient way they refereed the games for this league throughout the season. The league was fortunate in having the Riddle boys in the paper trade. Their reputations are well known in Montreal amateur sport.

Technical Section

REVIEW OF RECENT LITERATURE.

E-2. Determination of methyl alcohol in sulfite liquor. Papierfab., **18**, 611-5, (1920): Paper, 28, (Sept. 22, 1920). Abstracted by C. J. West. Heuser and Aschkenasi studied Dugré's and W. Konig's methods of detg. MeOH. Dugré's method consists in oxidizing the alc. with CrO_3-H_2SO_4 mixt., the MeOH giving CO_2 and the EtOH AcOH which is distd. with steam and titrated: the method was not found satisfactory. In the Konig method the CO_2 from the oxidation of the MeOH is absorbed in a suitable train and weighed. By using the method the following results were obtained.

	Sp. Gr. $\frac{15°C}{15°C}$	% Alc. by Wt.	% MeOH	% MeOH of Total Alc.
I	0.8133	93.48	2.51	2.686
II	0.8125	93.77	3.12	3.32
III	0.8116	94.10	3.60	3.82
Swedish Alcohol.	0.81485	92.85	2.44	2.62
Swiss Alcohol . .	0.8113	94.19	3.76	3.99

—A.P.-C.

PATENTS.

K-6. Method of treating straw and the like for making paper pulp. J. Soc. Chem. Ind., **39**, 624A, (Sept. 30, 1920) U. S. patent No. 1,347,979. E. E. Werner, July 27, 1920. Straw or the like is treated with an excess of an alkaline soln., and, before further treatment, a portion of the soln. is expressed to reduce the alkalinity of the material to a given degree.—A.P.-C.

K-18-Bevelling millboard edges. Br. patent No. 144,-090, Wilmar Engineering Co. Ltd., Glasgow. Paper, 30, (Sept. 22, 1920). An improved contrivance of the type in which a rotary knife is mounted on a spindled journal in a frame ready to cut edges of card-board blanks held by a guide plate. The improvement consists in the provision of a grinder for sharpening the knives, and which is driven by the knife-grinding gear.—A.P.-C.

K-18. Improvements in corrugated cardboard. Br. patent No. 145,854. Wm. Grant Fiske, Director of Thames Paper Co. Ltd., Purfleet, Essex, England, June 29, 1920. Paper, 26-7, (Sept. 29, 1920). Corrugated cardboard, strawboard, and the like, is composed of a plurality of layers of boards which are corrugated prior to their becoming mutually immobile owing to the action therebetween of an adhesive when dried or set. The corrugating of the several layers whereof the completed board is built up may be effected before or after the adhesive is applied thereto and the corrugations of the layers may be effected individually or collectively, or some may be corrugated individually and some collectively, or the totality may be built up of layers which are corrugated as they are superimposed. In accordance with one form of the invention, webs of comparatively thin pliable board are fed from supply rolls and with the exception of the lowest web each is passed over mechanism for applying to the under surface thereof a layer of adhesive, and the webs are passed thence through a pair of rollers grooved peripherally so that there is a sinuous space therebetween, and the assembled webs are corrugated in the direction of their length. The pairs of rollers are arranged and shaped so that their action is progressive, the portions of larger diameter being more closely spaced lengthwise of the rollers and overlapping to a greater extent as the treatment proceeds, so that the corrugations are progressively deepened and the width of the webs is reduced. According to another form of this invention, the webs, instead of being assembled to constitute a board before they pass through the corrugating rollers just described, are corrugated transversely as they are superimposed—A.P.-C.

K-23. Varnishing and gumming paper. Paper, 30, (Sept. 22, 1920). The sheets of paper, etc., are carried on endless tapes through a longitudinal drying chamber having a continuous circulation of hot-air maintained by a fan; the outlet of the fan casing is connected to the external heater through which the air is forced to the chamber through a series of pipes to hoods or canopies forming the roof of the chamber, the top of which is wholly covered by a perforated plate. The pipes may be controlled by dampers; and the plate divided into sections corresponding with the canopies.—A.P.-C.

K-23. Machine for making imitation hand-made paper. Paper, 27, 32, (Sept. 15, 1920). An invention to produce sheets of paper in imitation of hand-made paper of any required size or shape and automatically to deliver the sheets without the aid of hand labor. A wire cloth covered drum or cylinder is employed on the surface of which are formed the moulds and the drum is caused to rotate beside a pulp containing trough in the manner of the fountain roller of a printing press. The sheets are withdrawn on to an endless felt from which they are taken on to a conveyor and delivered. —A.P.-C.

K-0. Machine for delivering predetermined lengths of paper, tape, etc. Paper, 30, (Sept. 22, 1920). —A.P.-C.

K-0. Machine for the manufacture of paper excelsior. Can. patent No. 197,583, I. HOFFMAN. Assignor of a third interest to K. KREIZER, Ford City, Pa., U.S.A., Feb. 24, 1920. Claims allowed 15.—A.P.-C.

K-0. Use of paper in the manufacture of calcium cyanamide. Can. patent No. 203,558, The American Cyanamide Co., New York City, Assignee of GEO. E. COX, Niagara Falls, Ont., Aug. 31, 1920. The process of producing $CaCN_2$ from $Ca(CN)_2$ which consists in introducing into a cyanamide furnace a suitable removable form, inserting in said form a sleeve of perforated paper, charging finely ground carbide into the sleeve, covering the mass of carbide with a heat insulating cover, removing said form, and proceeding with the nitrification of the carbide. Claims allowed 5. (See also U. S. patent No. 1,315,678, Chem. Met. Eng., **22**, 89, Jan. 14, 1920.) A.P.-C.

L-4. Paper box blank. Can. patent No. 202,752, H. B. SMITH, Brooklyn, N.Y., U.S.A., Aug. 10, 1920. Claims allowed 32.—A.P.-C.

L-4. Apparatus for manufacturing seamless envelopes. Can. patent No. 204,561, TORAKICHI UMEDA, No. 2233 Tennoji-Mura, Prefecture of Osaka, Japan, Oct. 5, 1920. Claims allowed 3, (Same as Fr. patent

No. 502,185, Papier, **23**, 103-4, May, 1920; Pulp & Paper, **18**, 926, L-4,, Sept. 2, 1920.)—A.P.-C.

L-4. Process for compacting, batting and felting cellulose fibrous material out of liquids. Can. patent No. 204,656, WM. F. BOYSEN, Buffalo, N.Y., U.S.A., Oct. 12, 1920. The process of forming articles of fibrous material which consists in depositing a liquid diffused pulp onto a perforated former drawing the liquid down through and compacting said pulp on said former by means of a suddenly applied vacuum below said former, the application of a vapour re-agent drawn down though said pulp by said vacuum, depositing an adhesive compound on to said compacted pulp and drawing said compound through said pulp by a further application of a suddenly applied vacuum whereby pulp is cemented. Claims allowed 7.—A.P.-C.

L-4. Envelope making machine. Can. patent No. 204,-899, FRED. J. PARKS, New York City, Oct. 19, 1920. Claims allowed 5.—A.P.C.

L-5. Production of hydrated derivatives of cellulose. Can. patent No. 204,250, C. F. CROSS and E. BEVAN, London, England, Sept. 28, 1920. A process of treating fibrous cellulose which consists in subjecting the cellulose to the action of alkaline lye of strength between 6 and 11% (NaOH) and then to the action of CS_2, and finally washing the product. As a new product, hydrated fibrous cellulose having a thickened cell wall and an exaggerated central canal defined by symmetrical sinuous outlines. Claims allowed 7.—A.P.-C.

L-5. Process of dissolving cellulose. U. S. patent No. 1,348,731, Z. OSTENBERG, Assignor to INTERNATIONAL CELLULOSE CO., Aug. 3, 1920. J. Soc. Chem. Ind., **39**, 624A, (Sept. 20, 1920). Cellulose is dissolved in a highly-concd. HCl in which a portion of the HCl has been replaced by 1½ times its quantity of concd. H_2SO_4 below 50°C.—A.P.-C.

L-5. Treatment of pulp with thiocyanates. Can. patent No. 203,364, The Manchester Oxide Co. Ltd., Assignee of R. H. CLAYTON and H. R. WILLIAM all of Manchester, and of J. HUEBNER, Chadle Hulme, Chester, all in England, Aug. 24, 1920. The process of treating a cellulose substance in the production of solutions and viscous or gelatinous bodies or masses thereof, which consists in treating the cellulose with a mixt. of a soln. of thiocyanates and a soln. of a salt which does not adversely affect the action of the thiocyanates and which may itself have no dissolving action upon the cellulose; or in treating it with an acidified soln. of thiocyanates. Claims allowed 4. Same as Br. patent 124,-979, U. S. patent No. 1,333,465, Fr. patent No. 500,504. See Pulp & Paper, **17**, 851, (Oct. 2, 1919); **18**, 953, K-20, (Sept. 9, 1920).—A.P.-C.

L-5. Paper feeding device for wrapping machines. Can. patent No. 197,991, R. LEUMANN, Lausanne, Switzerland, March 9, 1920. Claims allowed 4.—A.P.-C.

L-6. Composition for coating airplane and similar fabrics. Can patent No. 198,265, Pratt & Lambert Co., Buffalo and New York City Assignee of H. Ross, Buffalo, N.Y., U. S. A., March 16, 1920. 100 parts of acetyl cellulose and 40-60 parts triphenyl phosphate are dissolved in a suitable solvent. Claims allowed 12. —A.P.C.

L-7. Manufacture of viscose filaments. Can. patent No. 203,160, E. BRONNERT, Dornach, Neidermorschweiler near Mulhausen, Germany, Aug. 17, 1920. A process for the manuf of glossy filaments or threads from crude viscose by means of warm mineral acid. characterized in that crude viscose which has stood abt. 8 days or more at a temp. of 15-20°C and has been filtered (preferably several times) is expressed into warm 20% H_2SO_4 of a temp. of abt. 40°C, wound on suitable spools, and thereupon or afterwards washed with warm water and dried in a known manner under tension and desulferized substantially as described. Claim allowed 1.—A.P.-C.

L-7. Conditioning paper for subsequent spinning. Br. patent No. 144,057. H. Wood, Bolton, England. Paper, 30, (Sept. 22, 1920). Patent issued covering a machine which simultaneously cuts and conditions paper ready for spinning. The conditioning liquid is applied during the cutting, and varies in quantity as the diameter of the paper strips on the roll increases.—A.P.-C.

K-7. Automatic continuous mixing system for paper stock. EDWARD J. TRIMBEY. Paper, 13-4, (Sept. 22, 1920); Pulp & Paper, **18**, 965-6, (Sept. 16, 1920). Groundwood and sulfite are furnished continuously either by gravity or by pumping, to their respective compartments of a double vat; each compartment is provided with an overflow dam and a float valve of special design, for maintaining a const. level in the compartment regardless of the rate of flow of the stock. Mounted in one end of this double vat is an outlet spout communicating with both of the groundwood and sulfite compartments and so arranged with a sepg. partition and an adjustable top that the cross sectional areas from the outflows of groundwood and sulfite will give the desired proportions of each and at the same time the total flow can be varied to meet the changing requirements of the paper machines. In addition to being adjustable for both total vol. of flow and relative proportions of groundwood and sulfite this outlet spout has valuable regulating features which automatically compensate for minor variations in the consistency of each. With const. head and varying vel. and consistency, by proper design the decrease in vel. can be made to counterbalance the increase in consistency so that within a given consistency range there will be a const. rate of discharge of dry stock per unit of time. It is expected that the stock coming to the vats of the continuous mixing system will be controlled by consistency regulators but this automatic compensating feature is of value as a second control to smooth off temporary variations and to act in cases of emergency. The other ingredients, clay, color, and alum, are supplied in soln. or in liquid form to receiving vats in which a definite head is maintained by means of overflow dams. The amt. of chem. soln. is exactly proportioned to the amt. of stock by means of a double overflow weir having a separator between the 2 weirs. The discharge from one weir goes into the mixt. of sulfite and groundwood, and that from the upper weir joins the overflow from the upper vat and is returned to its supply tank. The separator between the 2 weirs is mechanically connected to the mechanism for raising and lowering the adjustable tops of the stock spouts for groundwood and sulfite in such a way that when the pulp discharge ports are closed the weir discharging into the pulp mixt. is also closed and the liquid all goes out at the overflow. As the stock ports open the separator is automatically shifted to keep the length of the weir always proportional to the area of the stock ports. This continuous mixing system is not limited to newsprint mills alone, but can be adapted to any mill where the furnish is entirely in the form of soft stock, or where it can be reduced to soft stock by means of a pulper or shredder, and it is necessary to add definite amts. of chemical or liquids.—A.P.-C.

UNITED STATES NOTES

The machine shops of the Bagley & Sewell Company, manufacturers of paper making machinery, are still running day and night to meet the heavy demand for equipment ordered for the industry all over the country. While the concern has been carrying on work on this basis for several years, paper men in Northern New York regard as a most hopeful sign the fact that orders continue to pile up for the Bagley-Sewell people without any indication of a letup. The company is one of the few Watertown industries to be unaffected by the present business slump. While many men in other shops have been thrown out of employment, and are seen daily on the streets anxious to get work, the employes of the Bagley & Sewell Company are busy. It is said that the company already has on hand orders sufficient to require night and day operation for more than two years to come were no more orders received in the meantime.

L. M Alexander, of the Nekoosa-Edwards Paper Company, Port Edwards, Wis., and W. J. Raybold, vice-president and treasurer of the B. D. Rising Paper Company, Housatonic, Mass., will represent the American Paper and Pulp Association at the Ninth Annual Meeting of the Chamber of Commerce of the United States. Mr. Alexander, as National Councillor of the American Paper and Pulp Association, is automatically entitled to go as a regular delegate. Mr. Raybold's selection as a delegate was made by Geo. W. Sisson, Jr. president of the Association.

The Union Bag and Paper Company reports for 1920 net earnings, after charges and taxes, of $3,474,926, or $23.20 a share on the $14,977,850 common stock outstanding. In 1919, the earnings totalled $1,680,619, or 16,81 a share of the $10,000,000 stock then outstanding. Net earnings were 5,046,300 and depreciation charges $428,173. Interest charges and taxes exceeded $1,000,000 and dividends of $1,081,896 were distributed, leaving a surplus for the year of $2,393,030. After making surplus readjustments, setting up a reserve for dividends and writing off from surplus the $4,977,850 stock dividends paid during the year, the total profit and loss stood at $1,874,305.

The Post Office Department, as an economy measure, is using for official correspondence a huge stock of old purple 3 cent stamped envelopes. Finding a large supply of these envelopes on hand, the postal officials sent them all back to the printer, who imprinted the penalty warning across the stamp as a sort of cancellation. The envelopes are now being used for official correspondence. Even the envelopes upon which were printed the return address for various banks and other business establishments during the war have been treated in the same manner.

The Carton Club of Chicago, whose membership is made up of all the prominent Chicago paper box manufacturers, recently held its annual meeting at the Traffic Club, Chicago. The gathering proved to be the largest yet held by the organization. Optimism as to the future outlook in the trade marked the talks of most of the speakers.

A marked increase in operations at the mills in Holyoke, Mass., is reported, particularly at the plant of the American Writing Company. Officials of this concern state that the week ending, March 26 has been the busiest experienced so far this year.

Damage, estimated at about $25,000, was sustained through a fire which last week destroyed the plant of the Russell Product Company, South Camden, N. J. Stock and machinery were almost entirely destroyed, but the loss is fully covered by insurance.

The Boston Paper Trade Association at its annual meeting and banquet, held recently at the Algonquin Club, Boston, re-elected Herbert W. Mason president of the organization. Other officers chosen for the ensuing year are: John A. Andrew, first vice president; Alfred Leeds, second vice president; T. H. Casey, treasurer, and W. B. Stevenson, secretary. Alvin W. Simonds, president of the Simonds Manufacturing Company, Fitchburg, Mass., one of the principal speakers at the affair, chose as his topic "Business and Industrial Conditions." Mr. Simonds expressed himself as being highly optimistic as to the future of business, and although his attitude since the day of the armistice had been a decidedly pessimistic one.

With the signing of an agreement by the Bryant Paper Company and the Kalamazoo Union of the International Brotherhood of Papermakers, and the acceptance by the employes of the Vegetable Parchment Company of a revised wage scale, the likelihood of a strike over the wage question in the Kalamazoo Valley has probably been averted. The employes of the Bryant Paper Company decided to accept a cut of 16 2-3 per cent for all grades of workers, both union and non-union, from now until May 1, when the agreement for the following year will be reached.

Wage re-adjustments have been effected in the paper mills of Crane & Co., Pittsfield, Mass. A wage reduction of from 10 to 15 per cent was announced by the Cranes and Byron Weston last Friday, to be effective beginning March 28.

The S. D. Warren Company, Westbrook, Mass., announced a reduction in its working schedule to a five-day week, beginning April 2, until further notice. Business conditions are said to have necessitated a curtailment of production.

Protesting against a wage cut amounting to approximately 17½ per cent, most of the 500 employes of the Northern Paper Mills, Green Bay, Wis., quit their jobs last week. At the present writing the differences remain unadjusted, the strikers claiming that the plant is paralyzed due to the walkout. The company officials, on the other hand, hold that a large number of the employes have returned to work and that the mill will be running at normal capacity within a few days. Perry S. Wagner, general manager of the mill, in a statement to the workers and to the public, insists that the reduction was not made because of lowering living costs but because the mills could not continue operating unless production costs are reduced. The strike is the first this year in Wisconsin called to protest against wage cuts.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, March 26.—Although there is a good deal of optimism concerning the future of the pulp and paper trade the fact remains that a number of undertakings planned for this spring will not be gone on with the present time. One of the leading officials of a big Canadian pulp and paper mill told the Pulp and Paper Magazine that his company had decided on a policy of retrenchment as far as expansion went and that the outlook would have to present a more certain aspect before the program of improvements and additions that had been planned for the present season would be gone on with. This caution marks the trade generally although in many cases the original plans for expansion are proceeding in the conviction that the era of the big business is only temporarily suspended. It is confidently expected that the trade is going to come back strong and while some of the mills are deferring their enlargements as a result of a natural hesitancy, due to the quiet period, it is generally believed that it will be only a matter of a short time before the big improvements planned some months ago will be in full swing. In the meantime the pulp and paper trade is undoubtedly dull. Most of the mills are running light and it is not easy to dispose of paper products, despite the activities of salesmen. In some lines, however, there has been a distinct improvement, jobbers reporting a better demand and a bigger bulk of small orders, although big business is still unprocurable. Generally speaking there is an ever-increasing optimism in the future of the trade although business is undeniably hard to get and a stable basis for pulp and paper transactions has not yet been reached.

Pulp.—A prominent dealer in Montreal says there is no market for pulp and is of the opinion that when a mill, not receiving pulp on contract, gets an order for paper, it buys a car or two of pulp. Ground wood can probably be had for $40; news grade sulphite for $70-$75; bleached for $120, and kraft for $80.

Pulpwood.—A large pulpwood contracting firm informed the Pulp and Paper Magazine that all the mills were supplied with wood at the present time and no one is in the market for the commodity. Ontario shipments are well cleaned up and very little unsold wood is on hand. The 1922 season will open in May and what is being shipped out now is on the present year's contracts. New contracts will not be made until after May 1, and in the meantime there are no definite market prices. In the opinion of the contractor referred to present appearances indicated that the coming season's price will be at least ten per cent under those prevailing during the past season.

Coated Paper.—Coated paper mills report a fairly good volume of business and most of them are busy. A recent reduction of between eight and nine per cent leaves these quotations: No. 1, $17-85; No. 2, $16.85; No. 3, $16.10; tints, $18.10.

Bonds.—Sulfite bonds are quoted at 16½ cents for white, tints 17½ cents, and colored at 18½ cents, which list represents a recent reduction of 2 cents per pound. The cheapest writing paper is 15 cents per pound.

Book Papers.—One manufacturing firm gives the following prices on book papers: No. 1 book, $13.50; No. 2, $13.35; No. 3, 12½ cents, with M.F. book half a cent lower. Book papers are down a cent and a half.

Tissues and Toilets.—Tissues and toilet paper manufacturers report that business has picked up considerably during the past couple of weeks. The mills are busy and for the most part are running full. One mill reports that it has orders for two months ahead and that the outlook for the trade is very bright.

Rag and Paper Stocks.—Reports from paper manufacturers using blue cotton cuttings indicate that the operations have been decreasing rather than expanding so that there has been little need for mills to enter the market for these cuttings. There have been rumors of actual sales of new cotton cuttings made at far below the prices quoted, and no doubt smaller lots can be bought even cheaper from some of the smaller dealers. The most optimistic dealers in old cotton rags have been unable to see any change for the better in this market. In fact the demand from consuming mills has been so small that the tone has continued very uncertain, some descriptions showing further declines in price. Mills pay little attention to offerings of rags, and most dealers have not been looking for business as mills come into the market for what little they want at very low prices. The concensus of opinion is less optimistic as regards price advances in the future on account of the continuing lack of consuming demand in most quarters. The situation is sized up as very uncertain. The fact that at present prices rag collection is bound to continue small, and that prices offered for foreign rags are not attractive to overseas sellers, is not lost sight of, but the weak position of the consuming mills is the overshadowing factor. Nominally quotations are about the same as last week, but there have been reports of fairly large lots bought at very much lower figures. In the opinion of some of the oldest members of the paper stock trade the present market is the quietest they have experienced. Mills have continued out of the market, and only occasional small-sized orders are given, and then, such demand as there is, is directed towards a few grades only. Dealers, who are usually in the market for miscellaneous cars from country points, absolutely refuse to quote prices, and the larger packers claim to be having difficulty in disposing of their local collections without going into the market to buy outside packing. Buying by board manufacturers has been light. Prices have been easier on No. 1 mixed papers, and miscellaneous packings of this grade have been impossible to sell. Mills have been firm in their demand for repacked stock and the dealer who fails to put up material properly is having considerable difficulty in moving his stock. Shavings showed another sharp drop which was followed by newsblank and manila cuttings. Old kraft papers are again weaker, and taking it altogether the general tone of the waste paper market is anything but encouraging.

The following list shows a few reductions. Prices are per cwt., F.O.B. Toronto:

	F.O.B. Toronto.	
No. 1 white envelope cuttings·· ··	$ 3·50—	$ 4·50
No. 1 soft white shavings···· ·· ··	3·00—	3·25
White Blanks···· ···· ···· ···· ··	1·50—	1·60
Heavy ledger stock·· ·· ·· ·· ·· ··	2·75—	3·00
No. 1 magazine·· ·· ·· ·· ·· ·· ··	1·65—	1·85
No. 1 book stock···· ···· ·· ·· ··	1·25—	1·45
No. 1 manila cuttings·· ·· ·· ·· ··	1·50—	1·60
No. 1 print manila·· ·· ·· ·· ·· ··	·75—	·85
Folded news···· ·· ·· ·· ·· ·· ··	·65—	·75
Over issue, news·· ·· ·· ·· ·· ·· ··	1·00—	1·15
Kraft·· ·· ·· ·· ·· ·· ·· ·· ·· ·· ··	1·60—	1·80
No. 1 cleaned mixed papers·· ··	·35—	·45

NEW YORK MARKETS.

New York, March 26—(Special Correspondence)—The present week has been a quiet one in the paper industry. Buyers have continued to operate in very cautious fashion, and while it is true that the movement of some grades of paper has broadened slightly, the situation as a whole displays no appreciable improvement. Publishers, papeterie manufacturers, box makers and other large consumers of paper and paper board still evince an attitude of indifference in respect to the absorption of supplies excepting, of course, such supplies as they immediately require, and current buying is confined almost exclusively to small amounts of paper directly needed.

Reports from mill centres tell of most papermaking plants operating on materially reduced schedule. Manufacturers are pursuing a policy of producing paper only against actual orders, as most of them have ample stocks of their product on hand to fill the bulk of orders coming in. The greater part of these stocks are paper made from high-priced raw material, and manufacturers obviously are desirous of liquidating holdings before resuming production on a more normal scale.

An encouraging feature of the market situation is that jobbers' stocks are at a minimum. Taking New York, which is probably the largest paper distributing centre of the country, as an example, it can be stated without fear of contradiction, that local jobbers' shelves are practically bare of paper. For some months past jobbers have bought only when receiving orders from customers and have purposedly reduced their holdings to as low a point as possible and still be able to take care of the small commitments of buyers. The opinion is expressed by one of the leading jobbers in this city that if demand for paper should expand and jobbers should resume buying from mills in something like usual volume that it would not require more than a month for mills the country over to completely liquidate their stocks of finished paper. This means, of course, that as soon as consumers commence to increase their buying, manufacturers will almost immediately feel the effects of the improved market condition beause jobbers will be obliged to go to mills to obtain the paper necessary to cover their orders.

The newsprint situation is unchanged. If anything, spot stocks are increasing and quotations on prompt deliveries display an easing tone. Offerings of roll news for spot shipment at around 5 cents per pound at mills are quite numerous, and there is every reason to believe that the reports of sales down to 4.50 cents are true. The Federal Trade Commission's report on the newsprint industry for February shows that mill stocks increased during that month notwithstanding that production was cut down considerably. The contract basis on newsprint continues to be between 5 and 5.50 cents f.o.b. mills for the second quarter of the year, with the largest producing company quoting the higher figure.

The book paper market is quiet and lacking in feature. Manufacturers are maintaining contract prices at last announced levels, it being their contention that they are taking a loss on such business because of the fact that the paper involved is being made from raw material contracted for at high costs, but signs are not wanting that spot lots of book papers are being offered at surprisingly low figures. The wrapping paper situation also is quiet. Routine business is passing but there is no concerted movement of supplies and mills in general are in want of business. Tissues are in light demand, and are quoted at a basis of around $1 per ream for No. 1 white at mills.

Fine papers are sought only in small lots. Jobbers are buying sparingly as their needs arise, and demand from consumers reflects the quietness prevailing in the job printing trade. Quotations on writing and bond papers are very uncertain and on a broad range. There is no such thing as an established price basis as mills are changing quotations as the occasion warrants in the hope of securing the business.

A little better demand is noted for some kinds of box board. Folding box boards are in increased call and corrugating board for fibre shipping containers is said to be moving in larger volume. Chip and news board, however, continue quiet. The set-up box trade is dull and box manufacturers are buying board merely to cover immediate requirements. Quotations on plain chip range between $30 and $35 per ton at mills, and on filled news board at $35 to $40.

GROUND WOOD.—There is a lack of important trade activity in ground wood pulp. Consumers are coming into view off and on to absorb small lots needed to fill in contract deliveries, but the aggregate movement of mechanical pulp, other than to contract customers, is of slight consequence. It is difficult to say exactly what constitutes market values. Sales of prime spruce ground wood have been reported at $40 per ton at grinding mills, and there have been rumors of purchases at even below this level. Board mills are doing little or no buying, while newsprint manufacturers are confining their purchasing operations strictly to minor quantities of pulp actually needed.

CHEMICAL PULP.—The market for chemical wood pulp continues to display a waiting condition. There are few important buyers in sight, and the scattered transactions accomplished involve in the aggregate no sizable amount of pulp. Consuming mills are at present more intent on using up stocks on hand and pulp coming in on contract than in augmenting their holdings, and are refusing firmly to buy regardless of how attractive are the prices named by sellers. It is reported that one of the leading domestic producers of bleached soda is offering this grade of pulp at 5.75 cents per pound at the producing mill, which, if true, represents another fall in prices. Bleached sulphite of domestic origin is quoted at 6 to 6.50 cents, No. 1 domestic unbleached sulphite at between 4.25 and 4.50 cents at shipping points.

There is very little foreign pulp coming into the United States. As an apt illustration, the Federal Trade Commission's review of the newsprint market for February places importations of chemical wood pulp in January at 25,872 net tons, or 32,161 tons less than was imported in the same month of 1920. Im-

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porters are buying in Scandinavia almost solely against direct orders from mill customers and are bringing in little or no pulp on their own account.

RAGS.—Papermaking rags are moving toward mills in but small quantities. Consumers are holding definitely aloof as buyers unless in immediate need of stock and even then are absorbing only limited amounts required to fill in stocks at hand. With the spring commenced, dealers in numerous cases are attempting to move present holdings in preparation for incoming collections during the next several months, and there is a decidedly easy tone to values. In fact, it is questionable at just how low some grades of rags can be bought in certain quarters. Prices today depend in large measure on how desirous the seller is to liquidate stocks or how keenly the buyer needs rags. Some packers are holding back in trying to market rags in the belief that more favorable conditions will exist later on; others are in that mood where they will accept almost any prices within reason they are offered so long as they can rid themselves of rag holdings.

Roofing rags continue to constitute the most generally sought description of stock. Felt mills are buying cautiously but are, on the whole, absorbing fair amounts of satinets and strippings. No. 1 roofing is selling at $1 to $1.10 per 100 pounds f.o.b. New York, and cloth strippings have fetched a little higher than these figures. Old whites are in demand here and there, with quotations ranging around 7.50 cents a pound for choice No. 1 repacked and at about 6 cents for No. 1 miscellaneous packing. Thirds and blues are little wanted and are quoted at 2.50 to 2.75 cents at shipping points for repacked and 1.75 to 2 cents for rough packing. New cuttings are gradually easing lower in price.

PAPER STOCK.—The present week has been an exceedingly quiet period for the paper stock trade. Consuming mills have done little buying, evidently having their requirements covered for a time, and prices on several grades have receded to new low levels. Offers by dealers of No. 1 hard white shavings at 3.50 cents per pound f.o.b. New York and of soft white shavings of No. 1 quality at 2.50 cents have met with scant response, and reports allege that shavings can be bought at another quarter of a cent below these quotations. Old books and magazines have dropped to about 1.10 cents at shipping points, while old No. 1 kraft paper is offered fairly freely at 1.65 to 1.75 cents without attracting many takers. Folded newspapers command only in the vicinity of 50 cents per 100 pounds New York and No. 1 mixed paper has sold to mills down to 35 cents f.o.b. this city. The market in its entirety displays a weak undertone, and indications are that the only reason values are not breaking faster than they are is that prices are already so low that packers derive practically no profit in collecting and grading waste paper at ruling market levels.

OLD ROPE AND BAGGING.—Paper manufacturers are buying little old rope and bagging. Occasional orders are placed for old manila rope at a price basis of 4 cents per pound, or slightly less, at shipping points for No. 1 rope, but there is no concerted movement in any direction. Scrap bagging is offered freely at 1.25 cents a pound and less and is finding few buyers.

INDEX NUMBERS OF PAPER PRODUCTION COSTS

No. 9
February 1st, 1921

ISSUED BY THE AMERICAN WRITING PAPER COMPANY, HOLYOKE, MASS.

	1921		1920							1919	1918	1917
	FEB. 1	JAN. 1	DEC. 1	NOV. 1	OCT. 1	SEPT. 1	AUG. 1	JULY 1	JAN. 1	JAN. 1	JAN. 1	JAN. 1
WOOD PULP	285	327	324	329	316	308	283	274	226	218	206	205
RAGS	219	227	269	311	323	321	311	315	253	211	140	136
PAPER SCRAP	216	220	258	324	416	423	407	416	271	190	150	166
SUPPLIES	231	225	256	293	297	296	292	247	181	178	178	138
CHEMICALS	206	220	229	252	256	260	260	273	223	191	179	188
ALL MATERIALS	247	271	288	312	317	313	298	290	230	207	180	175
LABOR	276	276	276	276	276	276	276	276	225	197	168	130
MATERIALS and LABOR	**256**	**272**	**286**	**305**	**308**	**305**	**293**	**287**	**229**	**205**	**178**	**166**
A. W. P. Mill Brand Bonds, Ledgers, Covers and Fines	257	299	299	299	299	287	287	287	258	207	167	166

For more complete information, see our report issued October, 1920. In the last line we give, for purposes of comparison, index numbers of the average selling prices of about twenty of our mill brand lines. In every case, 1913 prices are taken as 100.

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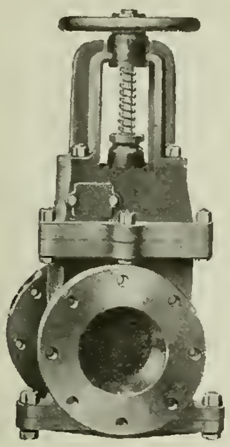

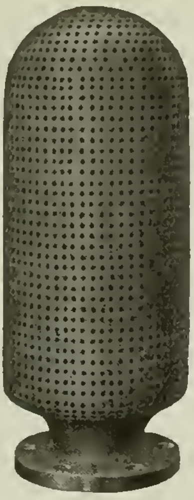

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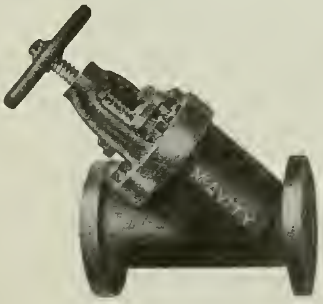

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Ancient Appearance—Purpose—Craftsmanship.

There is a sentiment connected with things antique. The passing of time has not hidden away the marvellous beauty of early craftsmanship. Whether men worked with a greater love and appreciation over the product of their labour then than is done in our present time, we know not.

There is a certainty, however, in the fact that the greater amount of time then available must have had a great influence in shaping workmanship to a course in which art was largely tributary.

Marvellous it is that in so many lines of effort, genius and invention have failed to pull from their pinnacles of supremacy these works which we call "Antique."

But, this little sketch is to deal with Antique Paper, and its use in books.

In paper itself we have one of the great exceptions, wherein machine-made products have held to the high standards and ideals of early craftsmanship. Speaking truly, paper-making, through the helpful aid of time and science, has greatly advanced over early methods and it has done so with no loss of beauty, strength or artistic qualities.

Note—We do not speak or refer, in saying "advanced," to the business and mechanical values of production, lower price per unit of distribution; which factors have been seen in many manufactured articles as a result of progressive methods during generations. We do say that to-day a quality paper of modern manufacture need fear no comparison with antique specimens.

To the earlier makers, however, all credit for the far-seeing comprehension of the beautiful.

For the printed book in hand design or letter press, no paper has ever supplanted the artistic, quiet, dull finish of an antique sheet.

It is pleasing to the eye, either decorated or in severe type treatment alone. In the highest qualities, it has no equal in the feel of its unobtrusive strength, pliability and mellowness.

To the reader it is a paper "par excellence" as the eye restfully absorbs the message of the text; there is no irritation or conflict with the reflected glare, as from the highly glazed or coated sheet.

In commercial use, the inability to use half-tones on antique paper has always caused regret. So much so, in fact, that continued desire to secure the most beautiful result, in which "Antique" is a necessary factor, has resulted in the high development of artistic drawing and engraving, whereby line engravings on zinc, and, for the best work, on copper, are now used as a means of illustration.

In many cases a careful and beautiful line drawing will make a more advantageous and accurate impression in illustration and certainly more beautiful.—The Crest.

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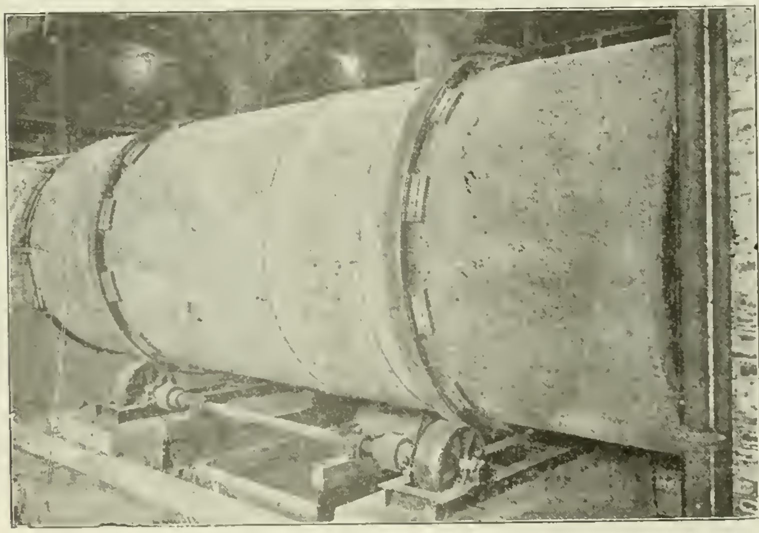

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VOL. XVIX. **GARDENVALE, P. Que., April 7th, 1921.** **No. 14**

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J. NEWELL STEPHENSON, M.S., Editor.

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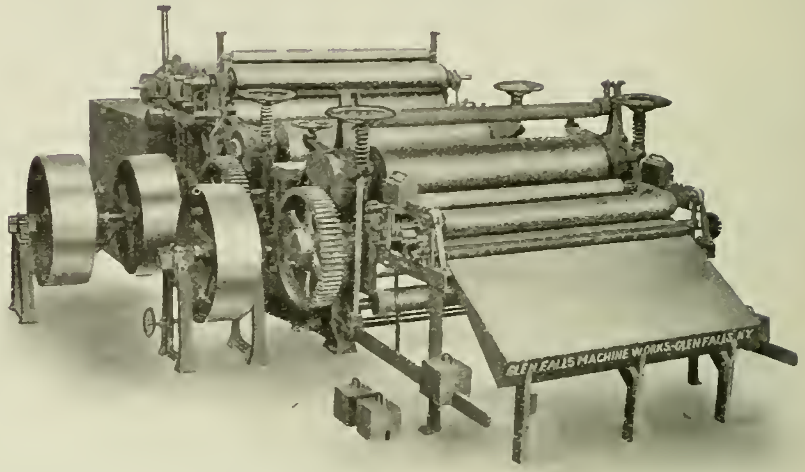

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EDITORIAL

THE COMMISSION OF CONSERVATION.

We had the misfortune once, in the course of a track race to tumble. This had two effects. It distracted our attention from the matter in hand and the brief interruption made it impossible to recover the lost position. The Commission of Conservation is to be abolished, or, at the least, its activities are to be temporarily suspended. The Commission of Conservation was making excellent progress along certain important lines of work in connection with the conserving of Canada's natural resources and this interruption of progress, if actually put into effect, will never be made good. For one thing, the spirit of an enthusiastic organization was considerably dampened even by the rumors that the work might be discontinued. The breaking up of the organization will mean that the members will establish themselves elsewhere and, once bitten, are not likely to return.

The effect of dropping the Commission will have a wide effect on several lines of research work in Canada because members of the various branches have been co-operating so cordially and smoothly with other organizations working along similar lines. This is especially true with regard to the forest study wherein the foresters of the Commission have been working side by side with a number of the large pulp and paper and lumber companies. We could fill an issue of this magazine with instances of valuable work which has been accomplished through such co-operative effort. We are sure that this early demise of a perfectly healthy organization will be a severe setback to forestry progress in Canada. A number of investigations have been planned out and carried far enough to show that results of the utmost importance and significance are certain of attainment and a number of difficult forestry problems are well on the way to solution. It will surely be a great pity if this work is allowed to slip back and the ground, which was won at such expense of energy and money, lost for want of continued activity.

The principal reason for abolishing the Commission is the desire of the Government to keep more nearly within its means. Certainly this is a laudable desire and if there are no other items of expense that can be eliminated then there will be regret without censure for this particular action. It does seem, however, a great pity that the momentum acquired during these past few years of fruitful activity should be sacrificed. It would seem far more desirable to curtail expense in a number of departments by concentrating efforts on work of a narrower scope so as to maintain the organization. This seems especially true when a government department is tying together important research work in several provinces, carried on by several agencies for the purpose of preserving one of Canada's principal natural resources.

In the event of its being finally decided that the Commission of Conservation must go it is our earnest recommendation to the Government that the forest growth studies of the Commission be continued by the Council of Scientific and Industrial Research. For this purpose the members of the Commission who have been doing this work could be attached to the staff of the Central Research Institute which is being established. This institute will have, among other functions, the purpose of investigating problems relating to the utilization of wood and it seems rather like building on the sand to investigate very deeply into such matters if the only source of the material is to be entirely neglected with the very imminent danger that the supply of raw material fail and investigations of processes dependent thereon consequently come to nought.

FOREIGN TRADE.

Some countries and some peoples seem to be predestined to manufacture about all the goods required for home consumption, and then some. The surplus must be sold in non-manufacturing countries or in a competitor's home market. Even in a country where a product is made it is strange how much foreign goods can be sold. This is partly due to the demand for special grades and partly to supplement domestic supplies. For instance, United States mills make all kinds of paper, but that country imports large quantities from other sources, partly, as in the case of newsprint, because there is not enough made at home, but in other cases, because some imported papers have peculiar properties which enable them to compete with the domestic product. There are also circumstances which sometimes enable the foreigner to undersell the local product. Sometimes this ability is found to lie in the marketing of an inferior article.

The case is somewhat different where several competitors meet in the same market which is foreign to both. Such meetings are frequent with nations that export a large proportion of their product. Great Britain, Germany and the United States have in past years been the principal rivals in such markets. More recently Japan has become a factor and in certain lines, Canada is becoming more important as a source of important manufactured products. During the war, when European countries found it difficult to manufacture material in excess of what was required for military operations, and when it was quite as difficult to transport what was manufactured, customers in South America, Australia and other far away places had great difficulty in finding supplies. As the United States did not become involved in the struggle until British plants where almost entirely devoted to war work, it was natural that customers of both German and British concerns should turn to America for placing their orders. In fact, orders flooded in to American exporters so rapidly that many manufacturers were practically submerged with business. Many new connections were made with little or no effort and a large volume of business was done. About the only limit was the available shipping space and the capacity of the producing plant. The sentiment against Germany and German made goods was a large factor in the rapidity with which many foreign importers changed their affiliations.

During the period of stress the competition was mostly among buyers for the restricted amount of material available, but this has all changed during the last two years. Even before the end of the war was definitely in sight, British manufacturers in co-operation with Government agencies, were planning a vigorous resumption of effort in the foreign field. British industry could not live without export connections. The well laid plans of export trade associations were put promptly into effect at the first opportunity and indications point to a rapid recovery of British trade in overseas markets. Where before the war it was a triangular contest with Germany, England, and the United States fighting it out on the far away commercial front, it is now settled down in most lines to a matched race between the English and the American. Well informed authorities intimate that the rapidity with which the English manufacturer and merchant has recovered his wind has been a great surprise while the easy business without strenuous competition for several years has somewhat diminished the aggressiveness of the Yankee salesman. The American, however, does not readily admit defeat and it is entirely unlikely that there will ever come the time when either of these rivals, whose friends at home and whose governments are so entirely friendly and cordial, will ever step out of the ring.

While the giants are busily competing for first honors, there are other aspirants for foreign business coming into the field. In some lines of manufacture, Canadian producers are not to be overlooked. Canadian goods as well as products from the United States found acceptance and favor in many countries in which they were strangers before the war. We are not likely to be contradicted in saying that many connections made by Canadian firms are less likely to be disputed by the British than in cases where the American or Jap has taken over British, German or Scandinavian customers.

One point which is most prominent in reference to development of foreign trade is the necessity for keeping after it and of ensuring the customer with a definite supply of goods that are desired. At the present time markets are dormant almost the world over, but it has been noticed that the countries which were first affected by financial troubles and commercial dullness, have already begun to show signs of revival, the period having lasted approximately eighteen months. If this tendency spreads and recuperation is general at about the same rate, we may expect a fair amount of foreign business to be coming in. Connections made, therefore, by Canadian firms during times of difficulty and kept fresh by the best possible service should bring satisfactory returns in the near future.

"TRADE ASSOCIATIONS."

The relation of the trade association to the trade journal is only one of the many live points discussed in the new book, "Trade Associations," by Emmett Hay Naylor, Secretary-Treasurer of the Book Paper, Cover Paper and Writing Paper Manufacturers' Association, just off the press. Mr. Naylor is not only widely known in the paper industry through his work as secretary for these Associations, but is nationally known in the trade association field as president of the American Trade Association Executives, and his new book which has been published only after thorough study and long and careful preparation therefore carries a double stamp of authority.

He discusses the efforts of some association to publish their own trade journals, and adds: "This at least may be said: When a trade association undertakes a publication of any considerable size, for instance a monthly magazine, it may expect innumerable difficulties. The ideal arrangement in an industry is to have one or two good publications issued independently by private parties, and then for the association to have its own regular bulletin, of whatever size may be convenient, but issued as a matter of intimate information to the members each month, and in no way dependent upon subscriptions or advertising."

Mr. Naylor's book, however, goes much more deeply than this into the general work and field of the trade association, and not the least importane portion is, in view of governmental activities in industrial fields, his discussion of the legal scope of an assocation, and particularly an avoidance of any attempt to even evade the law.

The value of the association to its industry and to the general public welfare is well analyzed, in the earlier chapters, and then goes into association routine, commercial and industrial functions, service activities, such as informative and protective, cost systems, statistical information, and concludes with two chapters on fair prices and the association and the law.

The entire book, which includes legal reference and a list of trade associations, is replete with references to the paper industry, and its associations, as examples of various means of providing service to association members.

WORLD TO ENLARGE PULP MILL.

The New York World Publishing Co., Park Row, New York City, has plans under way for enlargements in its mills at St. George, New Brunswick, recently acquired from the St. George Pulp Co. It is proposed to increase the capacity from 30 to 100 tons of pulp daily. The company is also planning for the erection of a new pulp mill in the vicinity of Ogdensburg, N.Y., and will call for bids on this latter work early in the spring.

The Purification of Water by the Continuous Blow-Off Method

By G. PARIS.

(Abridged translation prepared for the "Pulp and Paper Magazine" by A. Papineau-Couture, from "Chimie et Industrie", **4**, 722,730, Dec. 1920.)

The generation of steam, like so many other industrial processes, has been profoundly affected by the war, and requires to be watched more closely than ever before. The cost of the equipment required for the production of steam and for its transformation into mechanical energy has followed the general trend and has risen tremendously. The quality of the water used will have a considerable influence on the life of this equipment, and consequently also on the cost of the steam or power. It is therefore evident that the problem of the purification of the water assumes a very great importance.

In a purifying system, certain requirements must be met: it must be able to furnish large quantities of non-incrusting water, at a minimum cost and with an apparatus of such size that it will not be cumbersome. In the case of large central power stations (where as much as 1,000 tons of water per hour are evaporated) the older methods of purification, which have been successfully employed for many years, become inapplicable because of the excessive size of the equipment required to handle the huge quantities of water to be purified, the high cost of the equipment, and the large consumption of chemicals. One solution of the problem consists in supplying distilled water to the boiler. This, though very satisfactory in many respects, still has certain defects. Industrially distilled water contains a certain amount of entrained salts, which gradually concentrate in the boiler, and their concentration may become quite high. Moreover, it has been proved that distilled water more readily dissolves atmospheric gases (and more particularly oxygen) than those waters containing a certain amount of salts in solution: hence in such a plant the scaling of the boilers is replaced by corrosion due to the dissolved gases.

The continuous blow-off method of water purification, together with the elimination of the dissolved gases in the water, can completely eliminate both the scaling up of the boiler and the corrosion due to the dissolved gases, and it can be used in conjunction with the use of distilled water in the boilers. This is effected with a very compact apparatus and in a very economical manner, so that the process has a very brilliant future ahead of it. As a matter of fact it is being installed in the largest and most modern central power stations.

We shall study the principle of this process, which, though known for some time past, has not yet received the recognition which it deserves.

General discussion of water purification:

The object of water purification is to free boiler water of the alkaline earth salts which it contains and which on decomposing in the boiler deposit a scale. These salts can be divided into two classes, the carbonates and the non-carbonates. In the majority of natural waters salts of the first kind predominate and the most important of them are the bicarbonates of lime and magnesia. In the usual processes of purification these are eliminated by the addition of lime or of baryta, or by the addition of caustic soda, or by the addition of soda ash, the reactions coming into play being as follows:

$Ca(HCO_3)_2 + CaO = 2CaCO_3 + H_2O$

$Ca(HCO_3)_2 + 2NaOH = CaCO_3 + Na_2CO_3 + 2H_2O$

$Ca(HCO_3)_2 + Na_2CO_3 = CaCO_3 + 2NaHCO_3$

carbonate of lime or of magnesia being precipitated in every case. The bicarbonates of lime and magnesia can also be eliminated by permutation (Permutit process), in which case they are replaced by an equivalent amount of bicarbonate of soda. The water which is introduced in the boiler is always alkaline.

To the second class of salts, viz., the non-carbonates, belong a very large number of compounds, of which we shall mention only sulphate of lime (gypsum) and magnesium chloride. It is practically impossible to remove sodium chloride from any water. The reactions of carbonate of soda on gypsum and magnesium chloride are as follows:

$$Na_2CO_3 + CaSO_4 = Na_2SO_4 + CaCO_3$$
$$Na_2CO_3 + MgCl_2 = 2NaCl + MgCO_3$$

Here again the lime and magnesia are precipitated as carbonates, while the quantity of alkaline salts in the water is increased. These salts can also be removed by permutation.

Except in the case of the Permutit process, none of the above reactions are quantitative. They reach a state of equilibrium and in order to displace the equilibrium point in the direction required to precipitate as much of the lime as possible it is necessary to add an excess of the precipitating reagent, so that in every case the water added to the boiler is alkaline and contains some sodium carbonate. The concentration of water-soluble salts in the boiler rapidly rises, and also its alkalinity. Moreover, lime salts, which had not been completely precipitated before the water entered the boiler, give rise to sludge and to scale in the boiler. When the concentration reaches a certain stage the water foams and consequently the steam entrains a certain amount of water. At this stage it is necessary to empty the boiler, at least partially, and this causes a considerable loss of water, of heat, and of sodium carbonate.

Continuous blow-off method:

This is a soda purification process, which eliminates the above-mentioned losses, maintains the solids content of the water at a practically constant and relatively low value, considerably reduces the amount of soda ash required for the treatment of the water, and allows the water to be fed into the boiler at a high temperature, which is particularly favorable to the elimination of the dissolved gases.

This method of purification works in a closed cycle, and to explain it we must start at some point in the cycle. We shall choose the boiler.

The water in the boiler contains a greater or less amount of sodium carbonate, which, at the high temperature prevailing in the boiler, is partially decomposed into caustic soda and carbonic acid, the amount of decomposition being increased by high temperature, prolonged boiling, and low concentration, (owing to dissociation). Concurrently with this decomposition, the lime salts which have been carried into the boiler are concentrated and precipitated. But in the method under consideration this precipitation never results in the formation of scale owing to the continual circulation and renewal of the water in the boiler.

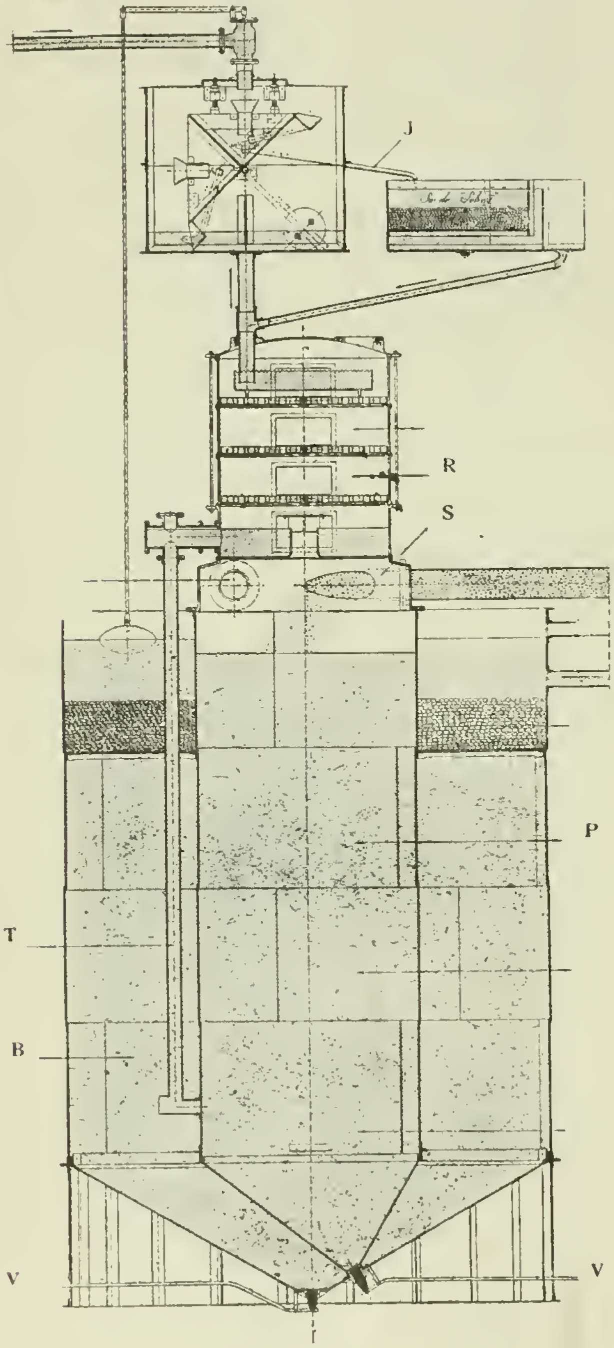


Fig. 1.

The blow-off valve of the boiler is permanently left open, so that a certain proportion of the water escapes. The blow-off, which consists of a mixture of water and steam at a very high temperature, enters tangentially into a steam separator, **S**, Fig. 1, at the base of a raw water heater, **R**. The steam, on bubbling up through the water, condenses, and at the same time precipitates the bicarbonates of lime and magnesia by raising the temperature of the water. Before the water is delivered into the heater **R**, it is measured and the amount of soda ash equivalent to the noncarbonate incrusting solids is added at **J**. The blow-off water from the separator **S** falls into the central tank **P**, in which it slowly travels downwards, thereby favoring the settling out of the sludge which it contains. Further, the cooling of this water by the raw water precipitates lime salts which were soluble at high temperatures. This precipitate, together with the sludge, settles at the bottom of the tank **P** and is periodically drawn off through **V**. The raw water comes down through the pipe **T** at a temperature in the neighborhood of 100°C and mixes with the blow-off water; and the mixture is drawn off through **V**^{1} at the bottom of the outer tank **B**.

The caustic and carbonated alkali of the blow-off water react with the raw water, precipitating the alkaline earth bicarbonates; as shown in the above equations. It is to be noted that the alkali contained in the blow-off water completely remains in the water, the caustic alkali being quantitatively transformed into carbonate while the carbonate is quantitatively transformed into bicarbonate. The first reaction takes place more readily than the latter, which requires a greater excess of reagent, and they can both occur simultaneously.

The precipitation, which requires two and a half hours in the cold, is complete in 15 to 30 minutes at the temperature of boiling water, so that the size of the apparatus can be reduced very considerably.

The water from the purifier is at a temperature of nearly 100°C and contains no alkaline-earth salts. It contains the exact equivalent as bicarbonate and carbonate, of the alkali which was present in the blow-off water as carbonated and caustic alkali, since the amount of soda ash added to the raw water was just sufficient to decompose the non-carbonate alkaline-earth salts. Consequently, the alkalinity of the salts in the water in the boiler is maintained constant.

In the boiler, the bicarbonate of soda is transformed into carbonate by loss of carbonic acid, and the carbonate is partly decomposed into caustic alkali, thereby completing the cycle.

Theoretically it should be sufficient to add just enough soda ash to precipitate the alkaline earth salts other than the carbonates; but in practice a little more than this is required to make up the slight losses which occur when the sludge is withdrawn from tank **P**.

When first starting up a boiler, it is necessary to add a considerable excess of soda ash over that required for the precipitation of the incrusting solids in the water contained in the system boiler-purifier-separator. The amount cannot be determined beforehand, as the excess required depends on the amount of caustic soda formed (which in turn depends largely on the temperature of the water in the boiler) and on the temperature at which the precipitation is carried out. The only guidance is that the greater the amount of caustic the less the excess of soda ash required, and the lower the temperature of precipitation the greater the excess of soda ash to be added and the greater the time required for the settling of the precipitate. If there is a deficiency of soda, it may be added to the raw water until the proper amount has been introduced into the system; while if there is too great an excess, its addition to the raw water is stopped for a short time until the amount has been sufficiently reduced.

In the case of boilers operating on distilled water this system can be applied: it may be used for the purification of the water fed to the distilling boiler (in which case the problem is the same as the one just described), and it may also be used for the boilers operating on condensation water. Water distilled in a boiler still contains numerous salts, though in very much smaller quantities than the raw water. Nevertheless, these would gradually accumulate in the boilers and would have to be removed by blowing off the boiler periodically. Further the entrainment of organic solids is relatively ten times as great as that of mineral salts, and small amounts of the former have a much greater power for inducing foaming of the water. These are brought down by the precipitation of the calcium carbonate in the purifier.

Chemical Balance of the Process:

We have just seen that the consumption of soda ash is diminished over that required by the usual processes by the amount required to precipitate the alkaline-earth carbonates present in the water; so that this process is particularly economical for the treatment of waters containing large amounts of calcium and magnesium bicarbonates, as is generally the case. This can best be brought out by means of a concrete example, and we shall take the case of a central station taking its water from the Seine, which has the following composition in grains per litre:

Sodium chloride	0.0065
Magnesium carbonate	0.0130
Calcium carbonate	0.1816
Calcium sulphate	0.0208
Iron and aluminium oxides	0.0015
Silica	0.0030

The purpose of the purification is to eliminate the carbonates of calcium and magnesium and the sulphate of calcium.

If the continuous blow-off process is used, when the boiler is first started up enough soda ash must be added to precipitate all the incrusting solids of the water contained in the boiler, in the tank containing the purified water, and in the purifying apparatus. This would theoretically require 226.6 g. of soda ash per metric ton of water, if only raw water was fed to the boiler. Once this required amount of soda-ash has been added to the system, there need only be added sufficient soda to precipitate the calcium sulphate (16.70 g.) of soda ash per ton of raw water) and a slight excess required to make up the losses through the withdrawal of the sludges. This excess must be determined by practice; but it is always very much less than the amount required for the precipitation of the calcium sulphate. The theoretically minimum of sodium carbonate in the boiler is therefore 219.9 g. per ton of water. But in practice these theoretical minima of 226.6 g. and 219.9 g. of soda ash are never attained. The raw water loses a considerable amount of its bicarbonates in the heater **R**, up to 75% if its temperature is raised to near the boiling point, and even more if it remains sufficiently long in the heater. Moreover, the raw water constitutes at the most 1/40 of the feed water, so that the alkalinity of the water in boiler can be reduced to $\frac{1}{40} \times \frac{1}{4} = \frac{1}{160}$ of the value given off, i.e., the soda content can be considered as being practically 2 g. per cubic meter of water.

The precipitation of bicarbonates of lime and of magnesia by means of soda ash is very slow at low temperatures, but much more rapid at higher temperatures. But at 80°C it still requires 4 times the theoretical amount of soda ash to obtain a complete precipitation from the Seine water in 20 minutes. This is due to the fact that the formation of bicarbonate of soda from the bicarbonate of calcium is a very slow process, and as it is due to a double decomposition a very considerable excess of reagent is required to displace the equilibrium point so as to increase the precipitation. But in the continuous blow-off method the precipitating reagent is sodium carbonate containing a considerable proportion of caustic soda, resulting in a complete precipitation when there is an excess of 40 to 60% of the caustic soda over the theoretical amount of soda ash required. Moreover, this excess does not entail any consumption of chemicals, as it always remains within the cycle of operations. Finally the precipitate from caustic soda is much coarser and settles very much more rapidly than the precipitate from sodium carbonate. Numerous experiments have shown that the corrosive action of soda ash on boilers is greater than that of caustic soda. The latter is a maximum for a concentration of 0.1% of NaOH, and then falls off very rapidly with increase in the concentration, becoming practically zero at a concentration of 1%. Moreover, the elimination of the dissolved gases eliminates corrosion.

The following are a few typical analyses of waters taken from boilers operating under this method:

	1	2	3	4	5
Raw Water.					
Total hardness	33.3	25.7	16.6	33.3	75.24
NaOH required for the precipitation of the carbonates	377	278	168	371	479
Na_2CO_3 required for the precipitation of the non-carbonate incrusting solids	51	83	33	52	34
Blow-off Water.					
Hardness	1.1	1.8	1.6	1.8	0.97
Na_2CO_3 content	567	411	1451	227	536
NaOH content	500	310	1752	118	100
Total alkalinity (as Na_2CO_3)	1230	822	3775	384	669
Percent of Na_2CO_3 converted into NaOH	33.9	50	61.5	40.9	19.9
Purified Water.					
Proportion of raw water	60.7	65.6	83.9	55.7	67.1
Proportion of blow-off water	39.3	34.4	16.1	44.3	32.9
Hardness of purified water	1.7	4.3	1.8	3.9	1.23
Na_2CO_3 content	502	273	306	115	273
NaOH content	0	0	126	0	0
Temperature (degrees)	84	50	70	82	

Thermal Balance.

From a thermal point of view, the object to be attained is the heating of the feed water to a temperature of 80 deg. C., or more, by mixing with blow-off water. The calories contained in the blow-off water are completely absorbed by the feed water, except for loss through radiation from the piping and equipment. But this loss can be reduced to a minimum by covering with some suitable heat-insulating material.

Disregarding the loss of heat through radiation, the proportions of raw water and of blow-off water at various temperatures required to bring the feed water up to 80 deg. C. may be calculated and will be found to be as follows:

Raw Water		Blow-Off Water	
Temperature (degrees C.)	Percent of Mixture	Temp. of boiler (degrees C.)	Percent of Mixture
0	46.7	150	53.3
0	56.6	180	44.4
0	60.0	200	40.0
0	64.9	225	35.1
10	50.0	150	50.0
10	58.9	180	41.1
10	63.2	200	36.8
10	67.4	225	32.6
20	53.9	150	46.1
20	62.5	180	37.5
20	66.6	200	33.4
20	70.8	225	29.2

It is thus seen that when the temperature of the raw water is between 0 deg. and 20 deg. C., and that of the boiler between 150 deg. and 225 deg. C., the blow-off must constitute from 30 to 50 per cent of the purified mixture. In the case of the maximum amount of blow-off water, viz., 50 p.c., the amount of blow-off is equal to the amount of raw water used. Now, in a central station the amount of make-up water is about 2 to 5 per cent: and hence in the present instance, the amount of the blow-off will also be about 2 to 5 per cent of the water in the system. This means that the water in the boiler will be completely replaced in from 20 to 50 hours, and it is thus seen that under these circumstances, even when the steam consumption is very high, there can be no scaling in the boiler.

Of course conditions may be such as to make it advisable to work under slightly different conditions, either to modify the conditions of purification or the concentration of the salts in the boiler. Purification at 100 deg. C., for instance, would allow of reducing the size of the purifying apparatus; while in other cases, owing to the use of economizers, it is not practical for the precipitation to be carried out at a higher temperature than 70 deg. C., in which case the settling of the precipitates is somewhat slower.

Advantages of the Continuous Blow-Off Method.

The advantages of this method can be grouped under three headings: chemical, thermal, equipment.

1) The chief advantage from a chemical point of view resides in the very greatly reduced consumption of the purifying chemical reagent. In the case of the Seine water above referred to, the consumption of chemicals when purifying by the more usual processes are as follows (theoretical minimum required for the treatment of one metric ton of water):

Soda ash method — 226.60 g. soda ash.
Lime and soda ash method — 110.89 g. of lime; 16.70 g. of soda ash.
Baryta process — 366.43 g. baryta.
Permutit process (required for the regeneration of the reagent) — 160.70 g. of sodium chloride.
Continuous blow-off method — 16.70 g. of soda ash.

These figures speak for themselves and are more eloquent than words.

2) From a thermal point of view, the continuous blow-off process possesses the advantage of feeding into the boiler a water at a high temperature. This point is too well known to require further explanation. We shall merely mention that, even when the water leaves the purifier at 100 deg. C., it is still possible to use economizers and obtain a very appreciable saving with them; and should the use of economizers require it, it is always possible to carry out the purification at 70 deg. C. If a device is placed between the purifier and the economizer to eliminate the dissolved gases out of the water, iron equipment may be safely used, without danger of corrosion, in spite of the high temperatures.

3) As far as the equipment is concerned, the size of the purifying apparatus is much smaller than that of the usual cold precipitation processes, because the precipitation and settling are much more rapid and complete. The water can be measured by means of a simple weighing machine, which does not occupy much space and can be placed in some corner of the boiler room. The apparatus is thus in a position where it can be operated all the year round; while those which are so large that they must be placed in the yard cannot be operated in winter as they would freeze up. The amount of the blow-off can be automatically regulated by a thermostat so as to give a constant temperature to the water in the purifier. By means of the arrangement shown in figure 2, there is no danger of the water getting too low in the boiler. The intake of the blow-off is at M and when the apparatus is working normally the mixture of water and steam follows the path MNOS, the valve V being closed. S is a reducing valve to relieve the pressure, and

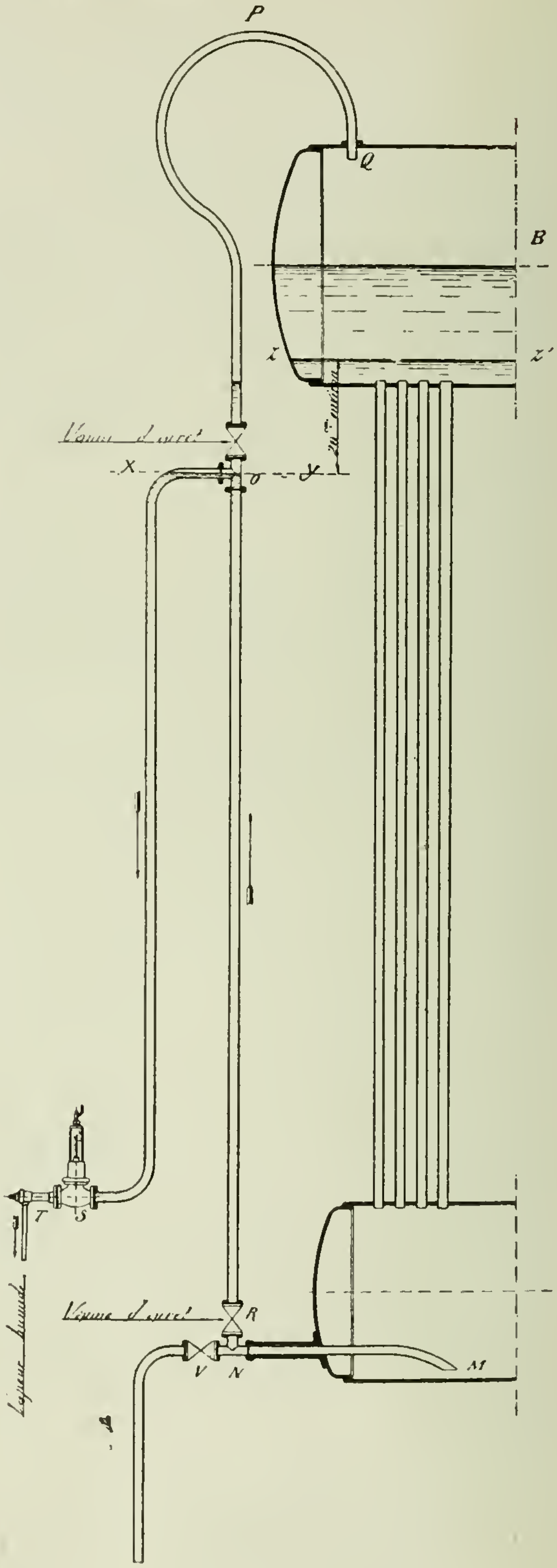


Fig. 2.

from there the mixture of water and steam goes to the separator and water purifier. At O there is a connection leading to the steam space of the boiler. The normal water-line in the boiler is about A B. Should the amount of water withdrawn be to great, when the water-line drops to a predetermined level, say ZZ', the level at O drops to XY, so that only steam escapes, and it is made to operate an alarm to warn the fireman.

It is thus seen that the use of the continuous blow-off is quite safe. It can be adapted to all existing boilers; and during the last few years it has earned for itself a very enviable reputation in the large central power stations of Germany.

British Trade News

(From OUR LONDON CORRESPONDENT.)

London, March 22, 1921.

The seventh of a series of informative luncheon addresses, arranged by the Livery Committee of the Stationers Company, was given the other day at Stationers Hall, London, when Mr. R. W. Sindall F.C.S. (of Sindall & Bacon, the paper chemists) gave an interesting address entitled "What is Paper?" Mr. Sindall made reference to the demands sometimes made upon the papermaker by the printer who, if he only had some knowledge of the principles of papermaking, might not put forward so many requests which seem to the expert papermakers to be more or less unreasonable. Mr. R. A. Austen-Leigh, President of the London Master Printers' Association, was in the chair.

Depression Still Rife.

Depression still continues in the British paper industry. One well-known papermaker said to me this week that "There was no life in things at all and some of the mills are being badly hit." This about sums up the whole situation. Papermakers are now looking for work for their machinery, they cannot get enough to keep it running; but prices do not show any material drop. For pure printing paper a minimum has been agreed upon by the makers, which will stand good until the end of April, so that it will be seen the mill men are holding out as long as they can for their prices. Indeed it is said that some mills are selling pure papers at a loss in order to reduce the stocks.

Forestry.

The Forestry Commission are getting a move on in the right direction and if their recommendations are carried out it is estimated 2,000,000 acres of land in the United Kingdom will be turned into state forests. Experts say that in 30 or 40 years' time the United Kingdom would be independent of foreign sources for timber supplies of ordinary sorts. This, of course, would not include pulp wood, though an expert pointed out sometime ago that if the waste ground of England, Wales and Scotland was planted with enough spruce in 20 years time there would be sufficient supplies of raw material to meet our normal output of paper, or even more. Forestry, however, is receiving more attention in the United Kingdom as the war was responsible for the depletion of extensive forests in order to provide material for huts and duck-boards and a thousand other incidentals in Belguim and France.

Imports from Canada.

At this period of the year there is always a falling-off in the imports from Canada and Newfoundland. This is noticeable in the supplies of strawboard, millboards, and cardboard. Of millboards Canada sent in February 424¾ tons and U.S.A. 151 tons. Canada holds a conspicuous place in supplying millboards to the British market, which is a notable place for consuming all kinds of boards—straw, card, paste, leather, and millboards. The total imports, in tons, in February were, roughly: strawboard, 8,174; millboards, 1,492; card and pasteboard, 422; leatherboards, 109. Most of the strawboard supplies come from the Netherlands.

Pulp Situation.

The pulp market continues dull and only a few spot lots of chemical pulp have changed hands during the past week. Groundwood is also neglected and the market shows no signs of a revival. As mentioned in the "Pulp and Paper Magazine" some weeks ago, there is still a strike on in Sweden and many mills are remaining closed. Quotations run: Sulphite (Bleached) No. 1., £46—£49; Easy Bleaching, £35—£38; Sulphite News, £30—£34; Unbleached Soda, £30—£35; Soda Kraft, £28—£29; Groundwood (Wet), £10; Groundwood (Dry), £19 10s.—£20.

According to advices received in London the Swedish Pulp Association has decided that all questions regarding the fulfillment of contracts should be left to the buyers and sellers to settle individually between themselves. "Affarsvarlden" says "Pulp makers cannot take into consideration proposals to simply cancel running contracts, which certain papermakers in England and on the Continent try to carry through. A pulp contract cannot be cancelled by one party only because it has proved to be unfavorable for that party." All this discussion arises out of the revision of contracts brought about by the depression in the paper industry. The great majority of the pulp men have met the papermakers in a very fair manner but, of course, there are bound to be grievances on the buyers side.

British Columbian Prospects.

A writer in the "Times," commenting on the pulp and paper trade of British Columbia, says that "far from indicating a further period of inactivity, lower prices at the present time are the only hope of a trade revival. Costs of production must come down, and are doing so. When normal is again registered on the trade thermometer, the pulp and paper trade in British Columbia will get into its stride. Stocks in the United States paper mills were seldom lower than now."

Hand-made Paper Mill Re-opened.

The hand-made paper trade of England is enjoying very fair prosperity just now and after seven years being shut down the Shoreham Mill, in Kent, is being re-opened under the guidance of Mr. Wm. A. J. Foster, who has had great experience in the hand-made product, and who has secured the shares and debentures of the Shoreham Mill. There are 3 vats in the mill and papers are produced for books and writing.

Problem's of the Papermaker.

Mr. Wm. A. Aitken, the works manager of the Westmill of the Imperial Paper Mills Ltd., Gravesend, and practical adviser to the Empire Paper Mills Ltd., Greenhithe, has published an interesting booklet called "Some Problems of the Papermaker—Their Practical Solution," which relates to a series of patents Mr. Aitken has taken out. He has visited Canada and the U.S.A. for the purpose of studying conditions there and as a practical papermaker has had wide experience.

His booklet is very interesting and worthy of the attention of Canadian papermakers.

The President of the W.P.A.

Mr. L. P. Andrews, President of the Wood Pulp Association, has done a good deal of travelling within the last six months. He has visited Canada and now he is in Scandinavia studying conditions. Mr. Andrews is a gentleman who will insist on first-hand information about pulp and he likes to investigate things from his own particular point of view.

Long Service.

Mr. Robert Gilroy, has been presented with a smoking cabinet by the workers of the three mills owned by Messrs. A. M. Peebles & Son, Ltd., as a memento of his 25 years service. Mr. Gilroy is one of the best known men in the British paper industry. He is a great organizer and most determined in anything he undertakes.

Notelets.

Hon. Rupert Beckett says last year his firm paid on an average 11 cents a lb. for newsprint as compared with 2½ cents a lb. in the pre war days. Had paper been less costly expansion would have been still larger than it had actually been.

Mr. Wm. Barlow, a director of the Burnley Paper Works, and a nephew of Lord Doverdale, a former President of the Papermakers' Association, has died at the age of 64 years.

The Siamese Government intend purchasing a small experimental paper mill and an American is to set things going for them.

Strawboards are selling in London at £8 8s. a ton.

Japanese Paper Manufacturers Union has decided to subsidise the export trade. They will allow five sen on every pound of paper sent abroad from their mills.

U.S. IMPORTS OF PAPER AND PULP.

During the month of December the United States imported 58,275 tons of newsprint from Canada and 23,514 tons from abroad. Germany contributed 14,206, Sweden 5,267 and Finland 2,297 tons. The overseas imports for the one month were nearly as large as for the preceding eleven months of the year, which totalled only 27,622 tons. The total imports of newsprint for the calendar year 1920 were 678,732 tons from Canada and 51,136 tons from overseas countries. The Canadian imports represented about 32 p.c. of the total U.S. consumption.

For the first time in the history of the United States the total exports of newsprint paper during 1920 were exceeded by the imports from abroad, the former totalling only about 45,000 tons for the year as compared with overseas imports of 51,136 tons.

U.S. imports of groundwood during 1920 aggregated 176,740 tons from Canada and 30,731 tons from other countries. The Canadian imports represented nearly 10 per cent. of the total domestic consumption. The imports of news-grade sulphite from Canada in 1920 amounted to 187,493 tons or 18 per cent. of the total consumption. Imports of unbleached sulphite from abroad amounted to over 100,000 tons, but this was not used in the manufacture of newsprint.—Spanish River News.

Blessed is he who has to pay an income tax, for, verily, he hath an income.

EXPECTS REVIVAL IN ENGLAND.

That business conditions in Great Britain are similar to those existing in Canada is the opinion of H. W. Sherriff of the Hodge-Sherriff Paper Co., who has just returned to Toronto after three months spent in the British Isles on business connected with the Wayagamack products. He adds however, that there is a difference between the situation as it exists in the Motherland and Canada in the fact that dealers over there are saddled with large stocks of paper and other commodities as well, which cannot be considered the case in this country. In conversation with the Pulp and Paper Magazine, Mr. Sherriff said the paper trade generally over there was slack and as a consequence the jobbers could not get rid of their stocks. It came under Mr. Sherriff's observation that the name of Canada was held in very high esteem in the old land and there was a disposition to speak with deep appreciation of the considerate treatment meted out by the Canadian pulp and paper mills to the Old Country trade as compared with the dealings of the foreign mills. The English paper dealers, said Mr. Sherriff, realized that during the eighteen months of abnormal trade the home trade had to be looked after but the Canadian dealers are generally given the credit for having done the best they could by their confreres, in the trade across the water, under somewhat difficult circumstances, with the result that as soon as paper requirements become pronounced again Canadian manufacturers will be given the preference. At the present time the relations between those in the paper trade in the Motherland and Canada are on a sound and friendly footing and it is Mr. Sherriff's opinion that these relations can be still further cemented by the Canadian dealers adapting themselves, as far as business interests will allow, to Old Country methods and making allowances for the difference in the two systems. Despite the hard knocks the mother country was getting through labor troubles, and strikes, and the generally unsettled condition of affairs in Europe, it is Mr. Sherriff's opinion that business will pick up within the next few months, but it will be largely contingent upon the settlement of the German reparation question. In this coming business revival Canadian manufacturers are destined to get a good share if they are careful to adjust themselves to business methods and conditions in England.

During his visit to England Mr. Sherriff was invited by the Canadian authorities in London to attend a conference in reference to the proposal to establish a Canadian Chamber of Commerce in London, which was held at the office of the Agent General of British Columbia and which was attended by many of the leading Canadian business men in the capital. At the meeting the opinion was expressed that the time was now ripe for an organization of the kind which would be of great service to the business interests of the Empire and to the business representatives of firms in Canada, the United States and other countries.

Since his return Mr. Sherriff has visited a large section of the paper trade in Toronto and Montreal and he states that he found business conditions not nearly as bad as he had been lead to believe, while in England.

Poland, in its fir trees, has an abundance of raw material for production of cellulose, and several factories are needed to supply local paper factories with enough cellulose for home demands.

Transactions of the Technical Section

THE MICROSCOPE AND ITS RELATION TO THE PULP AND PAPER MILL.

(Continued from last issue.)

Spectral Transmission of Filters.

The spectral transmission of the above mentioned filters in connection with photographing pulp having already been stained with Hersberg stain, is

Name of Filter	Visual Color	Spectral Transmission
B	Green	From 5,800 to red end
C	Blue violet	4,000 to 5,100
D	Purple	3,800 to 4,600 or from 6,400 to red end.
H	Blue	4,200 to 5,400
G	Strong Yellow	5,100 to red end
F	Red	6,100 to red end

These filters can be obtained from the Eastern Kodak Company Rochester, New York, and all the available information regarding the use of them is described in three or four booklets which they publish and which, if it is intended to go into photomicrography extensively, should be consulted.

Another important consideration is the relation of the color of light to the resolving power; as aforesaid, the distance between two lines which can just be resolved by a microscope objective is equal to half the wave length of the light by which it is observed, divided by the numerical aperture of the objective.

Formula $\text{Distance} = \frac{\frac{1}{2}\ \text{W L}}{\text{N A}}$ For instance, with a numerical aperture of 1.0 and an F filter (F filter pure red spectro transmission 6,100 to red end) and we will be able to go to 80,000 lines to an inch.

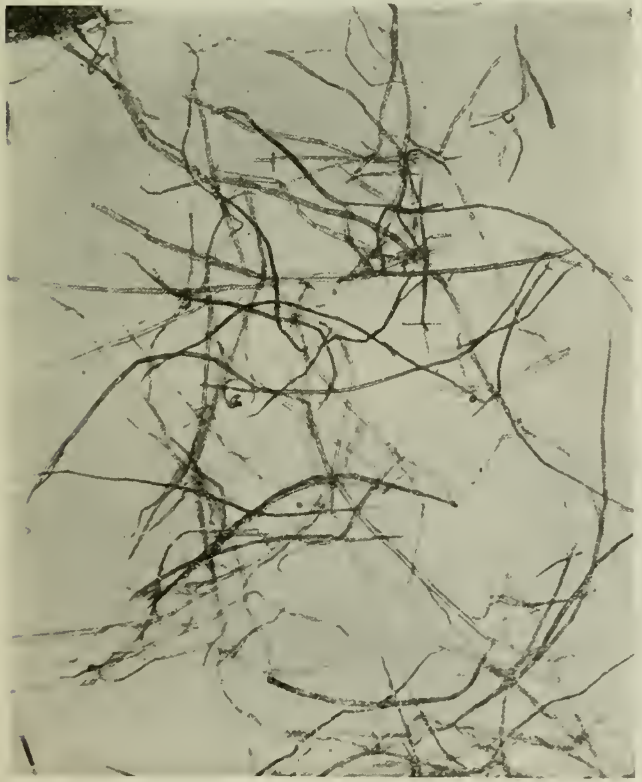


Fig. 1. Properly cooked, unbleached sulphite. Note long, straight fibres. — Magnified 20 times.

Time of Exposure.

Another important factor is exposure and the Eastman Kodak pamphlet on micrography gives a table showing the effect of the numerical aperture in regard to the variation of exposure and also the exposure factor. It is hereby repeated:

Effect of Numerical Aperture.

Exposure varies as $\frac{1}{(\text{N.A.})^2}$

Focal Length.	Average N.A.	Approximate Exposure Factor.
4 in., 100 mm.	.08	40
3 in., 75 "	.09	30
2 in., 50 "	.15	10
1 in., 25 "	.25	4
2-3 in., 16 "	.35	2
½ in., 12 "	.45	1¼
1-3 in., 8 "	.50	1
1-4 in., 6 "	.8	2-5
1-6 in., 4 "	.85	1-3
⅛ in., 3 "	.9	1-3
1-12 in., 2 "	1.3*	

*(Only 1.0 for photography).

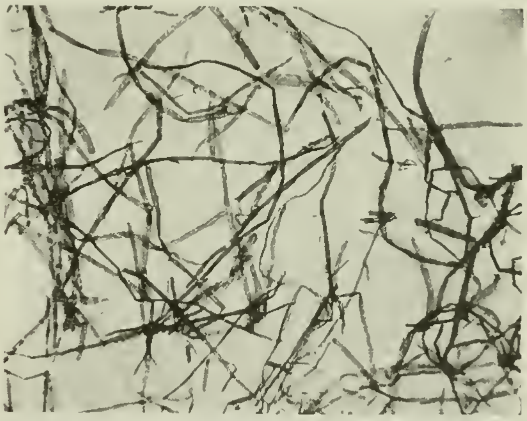


Fig. 2. Over-cooked spruce fibres The fibres are very brittle and easily broken. — Magnified 20 times.

Light for Microphotography.

Light is one of the most important factors in this work, particularly as to its steadiness and for this reason the concentrated filament gas filled bulb has displaced the arc light in many instances, as the bulb gives a steady wave of light, while the least draft or displacement of some part of the arc producing apparatus causes considerable fluctuations and above all a steady source of light is absolutely necessary.

It is really a pleasure to contribute anything which, in more capable hands, might prove of value to the industry, but I am sure you will understand me when I say that a subject such as this, involving practically every phase of our industry, cannot be satisfactorily presented, or the matter completely covered, in a fashion such as I have given.

Further, as my work has been of a nature of sales rather than of manufacturing, my progress has been somewhat hindered and I must leave it more or less entirely up to you gentlemen to take the suggestions

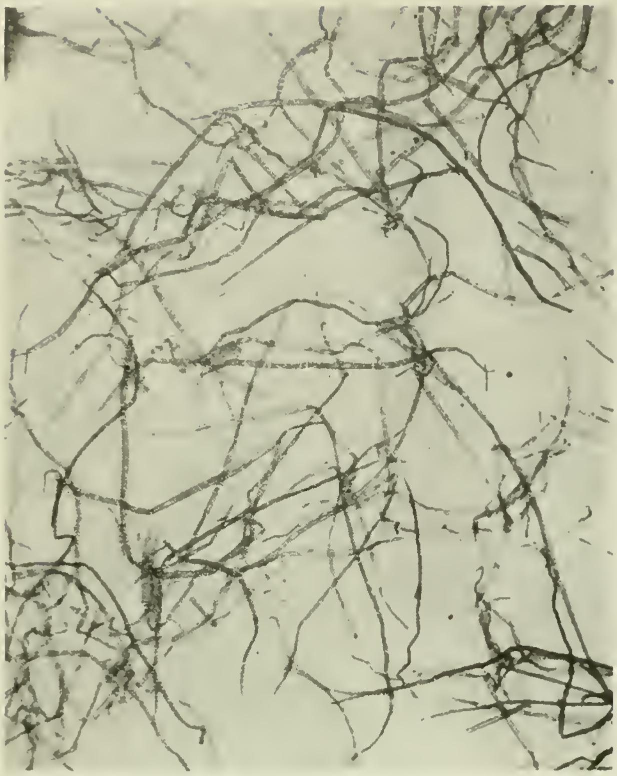


Fig. 3. Properly bleached sulphite pulp. The fibres are long, but not so stiff or straight as in unbleached pulp.— Magnified 20 times.

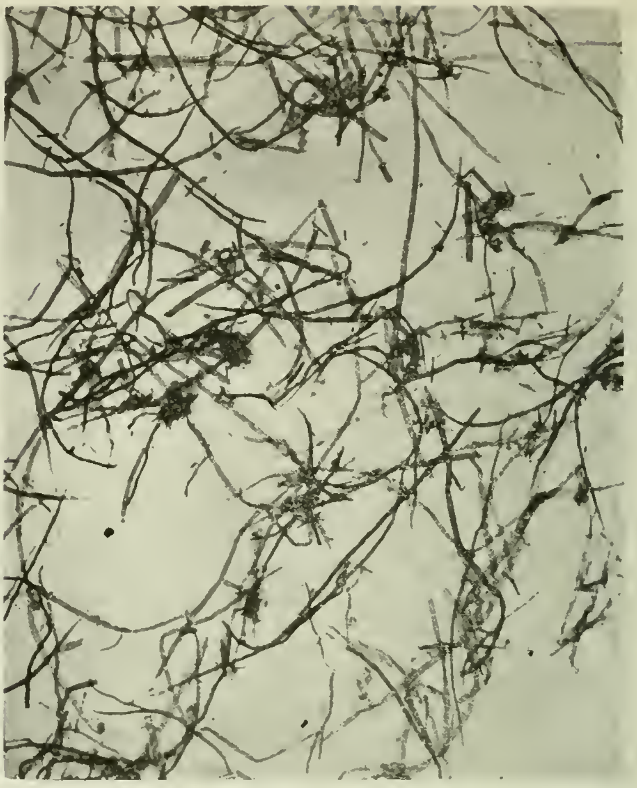


Fig. 5. Properly beaten sulphite pulp. The fibres are still fairly long, but some have been ground up into fine material which helps to cement the longer fibres together in paper.— Magnified 20 times.

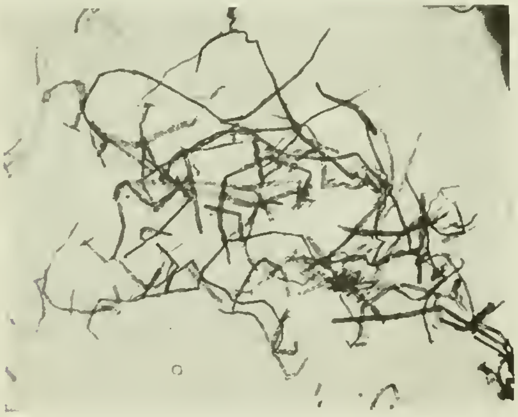


Fig. 4. Overbleached spruce fibres. The fibres are extremely brittle and easily broken. Specks showing on the fibres are due to deposits of calcium salts from the bleaching agent.— Magnified 20 times.

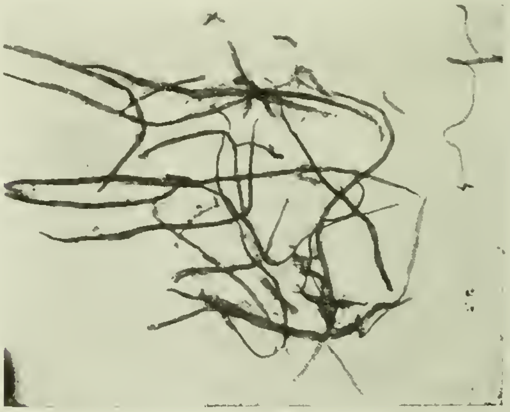
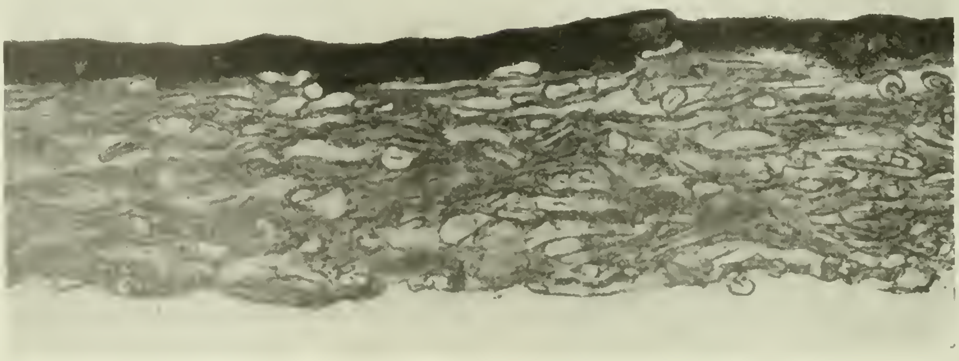


Fig. 6. Over-beaten spruce fibres. Note that fibres are greatly mashed and frayed with a large amount of very fine material.— Magnified 20 times.



Cross section of Azo, Hard X photo paper showing gelatine layer carrying silver emulsion and general lay of fibres. Cut across machine direction.— Magnified 225 times.

I have made as at least a thought for furthering activities along these lines.

DISCUSSION.

Some Specific Uses of the Microscope in the Pulp and Paper Industry.

Following Mr. Gartland's address, Mr. H. N. Lee, of the Hammermill Paper Co., Erie, Pa., squeezed some very helpful comments into the short time intervening before the showing of the Riordon film on Sulphite Manufacture. He stated that a person need not be daunted by anticipated difficulties in using a microscope, nor should one expect this instrument to solve all his troubles.

Mr. Lee has summarized his remarks as follows:

1. Identification of fibres in paper, identifcation of wood, tests to distinguish bleached and unbleached pulps, sulphite and sulphate pulps, identification of certain sizing and loading materials, examination of water, and other tests are so well known in the pulp and paper industry that they do not need to be discussed here. But there are other ways of putting the microscope to good use that are not so commonly employed.

2. In many cases the best value is not received from microscopical examinations if they are conducted apart from other tests. The man making microscopical investigations should be well acquainted with the processes in the mill, or if this is not possible, he should be in close contact with someone who does know the manufacturing methods. Microscopical observations may also be advantageously linked with chemical research with the result that both will profit.

3. The microscope, and particularly photomicrographs, may be made of great value in showing the men in actual production the effects which improper handling of the stock has on the fibre. The accompanying photomicrographs illustrate some possibilities in this direction. To see some of the actual effects on the fibre means more to the operator than to have only word description.

4. We have recently made some comparative studies of pulp made in different mills or under varied conditions in the same mill, and these have brought many things to light. For example, breakage of fibre, straightness of fibre, the presence of certain types of dirt, indications of over-bleaching, and other features can be distinguished and used to considerable advantage in locating and correcting causes of trouble. Possibly the identification of the nature of dirt offers the field in which the most profit may be quickly secured. Similar studies may be made on paper and in the case of dirt it may be found that the specks are not present in the pulp, but have been added in the later processes. Leather and other packing materials are sometimes found and lead to detecting sources of dirt and repairs or changes to eliminate it.

5. It appears that pitch is blamed for much trouble in the paper mill. The use of the dye Soudan III. will show whether or not pitch is present, and sometimes it will be found that pitch is not the cause of the trouble.

6. A line of investigation which has not yet been much attempted is that of the study of sections of papers. (See illustrations). It looks as though such problems as the kind, condition, and distribution of the fibres, the lay of the fibre, the penetration and distribution of sizing material and many other points may be very advantageously looked into by means of this method.

7. The apparatus necessary to carry out such studies is neither very extensive or expensive. The results obtainable depend on the time and energy devoted to the work, but considerable can be accomplished with a comparatively small equipment and a very reasonable amount of time.

BROMPTON TO ISSUE ATTRACTIVE BONDS.

Shareholders of the Brompton Pulp and Paper Company Limited, yesterday afternoon approved of the proposal of the directors of the enterprise in respect to the creation of a new issue of $3,000,000 twenty year 8 per cent. convertible bonds, and passed a by-law authorizing such action on the part of the board.

As previously announced, the new securities will carry the right of conversion into the common stock of the Brompton Company, on the basis of two shares of no par value common for each $100 par value of bonds. The option in this respect will be good for a period of ten years.

Of the total $3,000,000 bonds created under the new by-law, the directors have authorized the issue of $2,500,000, but it was stated that it was the intention of the board to confine the amount sold to the lowest minimum in view of the high cost of new financing at present, and that it was unlikely that more than $2,000,000 worth of the securities would be sold in the near future.

Mr. McCrea stated that for the first five months of the Brompton fiscal year, which began on November 1, last, earnings after deducting depreciation and bond interest, amounted to $560,000. Dividends on the common stock would depend on the maintenance of the profits from operations necessary to make such disbursements, as it was not the intention of the board to pay dearly for borrowed money and then distribute it among the shareholders.

January, it was stated after the meeting, was the poorest month of the current fiscal year in respect to earnings, but the decrease was a seasonal one. Results obtained in February, however, were much better than those of January, with a further improvement effected in March.

ABITIBI SHAREHOLDERS SATISFIED.

The satisfaction of shareholders of the Abitibi Power and Paper Company with the statement recently tendered them was manifest yesterday noon when only one or two outside the members of the board of directors appeared at the annual meeting of shareholders, held at the company's offices in the Sun Life Building.

President F. H. Anson commented upon the situation, saying that it was only following a poor statement that shareholders turned out in large numbers at annual meetings.

The board of directors remains the same as last year, the following gentlemen being re-elected to their seats: F. H. Anson, president; W. A. Black, G. E. Challes, W. K. George, G. H. Kilmer, K.C.; Victor E. Mitchell, K.C., D.C.L.; Shirley Ogilvie, Alexander Smith and Sir Thomas Tait.

KAPUSKASING WORK STOPS.

Cobalt, March 24.—Workmen returning here from Kapuskasing state that all construction work on the dam being built there for the Spruce Falls Company has been suspended, and the machinery taken out. Over 400 men are thrown out of work, it is declared, through the cessation of operations.

HEAVY CHEMICAL MARKET.

Chemical and Metallurgical Engineering of New York, under date of March 28th, says:—

"There are persistent reports from several directions of curtailed chemical production, while in some cases production has been temporarily suspended, as there is enough stock in second hands to take care of the demand at lower prices than producers can name. This condition is true among leading manufacturers of caustic soda.

In trying to analyze the chemical market, it is well to look into other markets, as conditions are practically similar and a great deal rests upon the materialization of developments there. The primary and wholesale markets, which for a time have shown a spotty improvement, have in many cases become dormant again. Railway traffic and earnings are decreasing continually. Steel output has fallen to less than one-half of mill capacity. Production of coal has fallen to the lowest point in the past few years and building operations are lagging far behind the total of new construction known to be in immediate demand.

Buyers as a result of existing conditions remain unwilling to contract for other than immediate necessities, which are at an extremely low figure.

The disposition on the part of some interests to sell English soda ash at $1.90 per 100 lb. ex-dock N. Y. is being watched very cautiously. Caustic soda held well owing to the suspension of production and consuming orders came into the market in better volume than in the past month.

Standard brands of caustic soda appear to be well held at the present time. Buyers demanding special makes are finding a stiff market. The general range was from $3.70 to $3.80 per 100 lb. ex-warehouse and $3.80 to $3.85 F. a. s. Occasionally arrivals from interior points go at a slight concession, while outside makes can be purchased in the neighborhood of 3½ cents per pound. Resale light soda ash is generally quoted at $1.95 to $2.05 per lb. in single bags. Offerings of English material have left the market in a somewhat unsettled condition. The feeling is prevalent in the trade that producers will be found to meet foreign competition, but as yet they have failed to do so. Barrels are quoted from $2.10 to $2.25 per 100 lb., according to quantity. Contract prices remain unchanged at $1.72½ per 100 lb., basis 48 per cent, in carlots F.o.b. works."

From Chicago the following is reported, under date of March 25th:—

"Consumers are still averse to anticipate and are buying only for their immediate requirements.

Soda ash, 58 per cent, continues to be firm and is quoted in barrels at $3.10 per 100 lbs. for small quantities. Caustic soda, 76 per cent, is quoted as high as $4.25 per 100 lb. in ton lots. Salsoda is moving in a small way at 2½ cents per pound. Bleaching powder is very dull, and is quoted at 3½ cents in 700 lb. drums."

The following general market prices prevail as of March 30th at New York:—

		Carlots		Less carlots	
Acid, acetic, 56 p.c.	100 lb.	$4.00	$4.25	$4.50	$5.50
Acid, glacial, 99½ per cent carboys	100 lb.	9.00	9.50	10.00	10.50
Acid, hydrochloric ...	100 lb.	1.75	2.00	2.10	2 25
Acid, sulphuric, 60 deg. drums	ton	....	....	15.00	16 00
Alcohol, Ethyl	gal.	....	....	4.90	5.25
Alcohol, Methyl (see methanol)					
Alcohol, denatured 188 proof	gal.	....	....	.40	.45
Aluminum sulphate, commercial	lb.	.02¼	.02½	.02¾	.03
— iron free ..	lb.	.03	.03¼	.03½	.03¾
Ammonium chloride, granular (white salammoniac) ..	lb.	.07½	.07¾	.08	.08½
Ammonium chloride, granular (grey salammoniac)	lb.	.08	.08½	.09	.09½
Barium sulphate (prec.) (blanc fixe)	lb.	.04½	.05	.05½	.06
Calcium hypochlorite (bleaching powder)	lb.	.02½	.02¾	.03	.03¼
Chlorine, gas, 100-lb. liquid-cylinders	lb.	.08	.09	.09½	.10
Glycerine, C.P. drums extra	lb.	....	....	.18	.19
Lead nitrate	lb.	....	....	.15	.20
Litharge	lb.	.08¾	.09	.09½	.10
Methanol, 95 per cent ..	gal.	....	....	.75	.77
Potassium bichromate	lb.	.12	.13	.13½	.14
Potassium hydroxide (caustic potash)	lb.	.09½	.10	.10½	.11½
— Prussiate, yellow	lb.	.25	.26	.27	.28
Salt cake	ton	....	....	32.00	34.00
Soda, light	100 lb.	1.95	2.10	2.15	2.40
Soda ash, dense	100 lb.	2.20	2.30	2.40	2.60
Sodium borate (borax) ..	lb.	.07½	.08	.08¼	.08½
Sodium Carbonate (sal soda)	100 lb.	1.90	2.00	2.25	2.50
Sodium hydroxide (caustic soda	100 lb.	3.60	3.70	3.80	4.00
Sodium prussiate, yellow ..	lb.	.13	.13¼	.13½	.14
Sulphur, crude	ton	18.00	20.00	....	....
Sulphur dioxide, liquid, cylinders	lb.	.08	.08½	.09	.10
Zinc oxide XX	lb.	.08½	.09½	.09½	.10

ST. MAURICE MADE MORE MONEY.

One of the most satisfactory annual financial reports issued this year by a Canadian pulp and paper company is now going forward to shareholders of the St. Maurice Paper Company, Limited, Canadian subsidiary of the Union Bag & Paper Company. The report, covering the year ended December 31 last, shows net earnings on the common stock equivalent to 22·68 per cent, or $1,769,988, as compared with 11.27 per cent on the lower capital a year ago, or $563,924. Through a stock dividend outstanding stock was increased from $5,000,000 to $7,899,900.

The net profit and loss account shows operating profits at $2,440,250 as against $1,320,621.

Gross profits totalled $2,976,646 against $1,418,804. Deductions included depreciation allowance and the setting aside ot $800,000 as a contingent reserve and against Government taxes as compared with $100,000 written off a year ago.

The company's working capital position improved during the year, surplus of current assets at December 31 being $3,308,890 as compared with $2,449,891 in 1919. Inventories and expenditures on logging operations tatalled $2,863,689, an increase of nearly $400,000 over the 1920 figures, while bank loans appearing at $475,000 in the 1919 statement find no counterpart in the 1920 figures.

Properties, timber limits, equipment, etc., are shown in the statement at $8,053,038, net additions during the twelve months involving an outlay of $1,002,850. The capital stock of the company was increased from $5,000,000 to $7,899,000, the change in this respect being due to the distribution of the 30 per cent stock dividend and the exchange of all but $47,000 of the outstanding bonds, shown a year ago at $1,440,000, into the common stock of the enterprise on a par for par basis during the year.

Depreciation and contingent reserves were substantially increased, the former now standing at $1,427,281, against $1,067,101 at the end of 1919, and the latter at $871,172, compared with $246,172 last year.

The "Why" of Pulp and Paper Financing

By A. R. R. JONES.

In certain quarters, probably not very fully informed as to the facts, surprise is expressed that most of the Canadian pulp and paper companies, after a period of unprecedented progress and prosperity, should now be resorting to new financing, or, in other words, that they should be borrowing new capital. But, just as there is financing and financing, so are there causes and causes for financing. There are industrial concerns that one knows of which are driven to financing in order to cover losses that have been incurred. There are other industrial concerns that would fain seek the solace of financing were it not that they are in too bad shape for any plan of sound financing to avail them anything. But far different is the case with the Canadian pulp and paper companies. They, on the other hand, are financing in order to recoup themselves for heavy capital expenditures, incurred partly out of income and partly at the expense of a fluid position. And they are fortunate in the possession of a vast margin of unpledged assets and earning power.

It must be borne in mind that it is within the last six years or so that the pulp and paper industry in Canada has developed—or, rather, has been transformed—from an industry of comparatively modest dimensions to one of enormous magnitude. Within the period named it has become the leader in the world. Thus, those six years have been years of unprecedented and unparalleled demand for the products of the industry. In order to keep pace with, and to be equal to, the demand, the leading pulp and paper concerns have spent very large sums either in adding to their timber holdings or in increasing their plant facilities or both. One company that one could name has recently spent $5,000,000 in extensions and improvements. Many other large pulp and paper concerns are in like case. The sums thus expended have been drawn directly from earnings, supplemented by bank loans. The financing, to which resort is now being made, by means of the issue of bonds, etc., is for the purpose of liquidating such bank loans and of putting the companies once more in what may be termed a fluid position. In the words of Mr. R. O. Johnson, of Messrs. Greenshields and Company, investment bankers of Montreal, with whom the writer, the other day, had the advantage of discussing the whole situation, "it is a natural and necessary sequence to a great development in a great business."

Of course, one is aware that a certain amount of criticism has been levelled at some of the companies by reason of the circumstance that, after having paid dividends of considerable size in the not remote past, they are now finding it necessary to seek new capital. But criticism of this nature does not take sufficient account of the fact, that, as Mr. Johnson pointed out, in many cases, for every dollar paid out by them in dividends, pulp and paper companies have put a dollar—and more—into their properties. And, after all, as he very pertinently added, "to provide for posterity is not the whole duty of shareholders."

In corroboration of the assertion that many of the pulp and paper companies have put more than a dollar into their properties for every dollar paid out in dividends, it may be mentioned that, in the last issue of "Investment Items," published by the Royal Securities Corporation, it is stated that "it is reliably estimated that well over 60 per cent of the recent capital expenditure of the leading Canadian pulp and paper companies has been met from this source. The Spanish River Company, for example, has invested $7,000,000 in extensions since 1915, with a resultant doubling of output, and without the addition of a dollar to the Company's funded debt until its recent issue of $3,000,000 of bonds to fund about 40 per cent of this $7,000,000 of capital expenditure. Many other large pulp, paper and lumber companies are in a similar position."

One is somewhat at a loss to understand why recent pulp and paper financing should have attracted so much attention—and some of it of a not too friendly kind. After all, there is surely nothing new in the idea of selling securities, while the pulp and paper companies are extremely fortunate in having securities of such unimpeachable character to sell for the purpose of providing the working capital they need in this period of readjustment. It may be surmised that but little of the "hullabaloo" would have been raised had not certain newspapers, conceiving that they have a grievance in the price that they have had to pay for newsprint, adopted a somewhat hyper-critical, as well as narrow, attitude. In the adoption of that attitude they seem to have short-sightedly overlooked the fact that anything which tends to impede the development of the paper industry must react to their own detriment. For, the more the paper industry develops, the cheaper newsprint must ultimately become. At any rate, the financing contemplated since the "hullabaloo" has been on, is only to the extent of some $17,000,000, which, as it is estimated that about $300,000,000 is invested in the industry in Canada, is not much more than five per cent of the capital invested.

Six months ago, it was probably the general view that business in the industry would keep on at high speed pressure for quite a while longer than it actually did. The industry, in fact, probably got caught, so to speak, three quarters developed. The result is that the last quarter of development, instead of coming out of earnings, has come out of the sale of securities. In the changed circumstances of today, the sale of such securities, in order to ensure ample working capital, is financial policy of unassailable soundness. It amply justifies the market price paid for the new capital.

Moreover, there is every indication that the public are alive to the favorable opportunities offered by investments of this nature. The distribution of the securities is general all over the country and in the United States as well. The pulp and paper concerns are well in the limelight. And the fact that they are able to finance under present conditions is cogent evidence of securities at their disposal.

When all is said and done, the fundamental laws of business still stand. The ebb succeeds the flow, and the flow again, in turn, succeeds the ebb. Business is reviving again—one can see the signs on all hands—as it has always revived in the past. It was the temporary breakdown of credit that made business temporarily slack. Now, bank reserves are accumulating, credit will become available and business brisk once more. Meanwhile, their present financing will enable the pulp and paper companies to pass through what is only a temporary condition, necessarily incidental to the readjustment period, with colors flying and with credit unimpaired.

An Odd Use of Paper

A long strip of tarred paper wrapped about a wooden cylinder seems a slight foundation for concrete pilings, which must bear up many tons weight, but that is exactly how the "cores" of these pilings are made.

The device for rolling the cores is a long wooden cylinder, turned by hand, with a trough of the same length beneath filled with hot glue. The first strip of tarred paper is as long as this section of the piling is to be, and is simply wrapped about the cylinder, and glued along its free edge. The paper is fastened by wire in three places. The next operation is a long narrow strip of paper wound on as the cylinder revolves, going through a little wooden device constructed for the purpose, which winds it on diagonally very much as a bandage is wrapped about a broken arm. A man with a brush stands ready to slap on some hot glue as each lap of the paper folds down. Wire is now wound on in the same fashion from a reel, beginning at one end and finishing up at the other. Two thicknesses of paper are rolled on in this way, and wired, making three layers in all. The hollow paper cylinder is then slipped from the wooden one on which it was rolled, and a wire mesh put on for reinforcement.

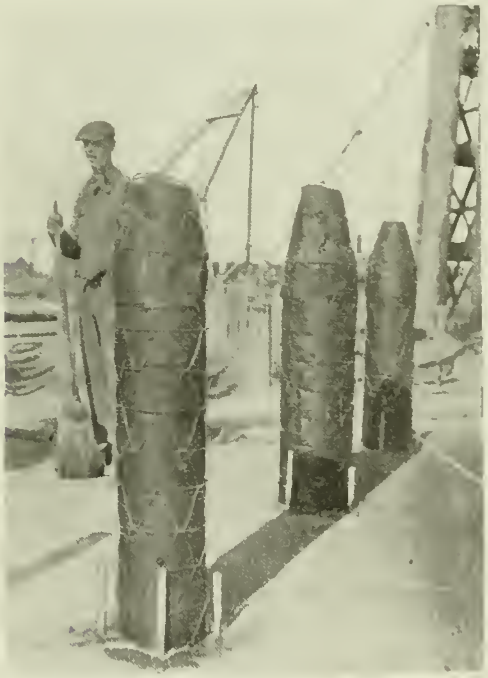


Fig. 1.—Paper cores and reinforcing wire ready for coating with cement mixture.

The cores are rolled in two sections, a long one for the body of the piling, and a shorter one for the base. A conical cap of paper is formed for one end of the base section.

The short lengths of the cores are set on a wooden platform, and fastened down. They are now ready for the first coating of cement and sand, which is applied by a large rubber hose, through a metel, rubber-lined nozzle. Air pressure of thirty-five pounds to the square inch is the power that forces the cement mixture out of the hose, water being applied at the same moment as the cement mixture. This process is known as "shooting" the piles, and has been used in making concrete buildings, barges, etc. The force with which the mixture is driven renders it very hard and flinty. A man with the hose moves all around the core, applying the cement evenly all around.

Next, comes the casing of reinforcing rods, and when it is put on, the man with the hose again gets busy, and builds up a sort of bulbous hood at the top, which will be the end resting on the ground. Rows of these sections, with their odd, mushroom-like hoods, somewhat resemble headstones in a cemetery, and are dubbed the "graveyard" by the workmen.

These sections are wheeled to the pile-moulding rack, a sort of scaffolding to support the cores while they are being shot. Here in one of the compartments, a foundation of cement, reinforced by a section of iron rail, is made for the piling's base. The long portion is now added, reinforcing rods wired on to the base, and the shooting of the long section of the piling begins. The big hose is carried up from "story" to story of the rack, and little by little, the work is completed.

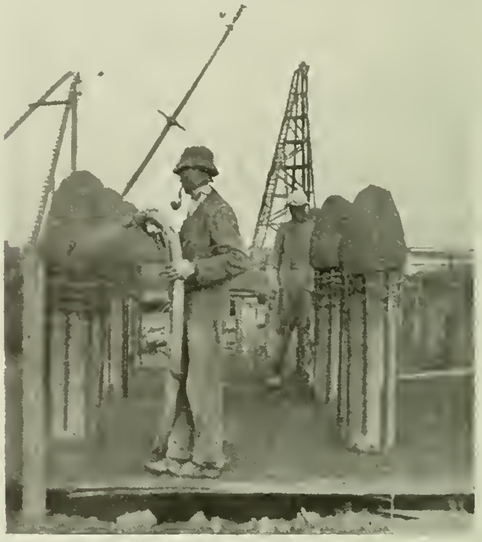


Fig. 2.—Building up the base section of the pile.

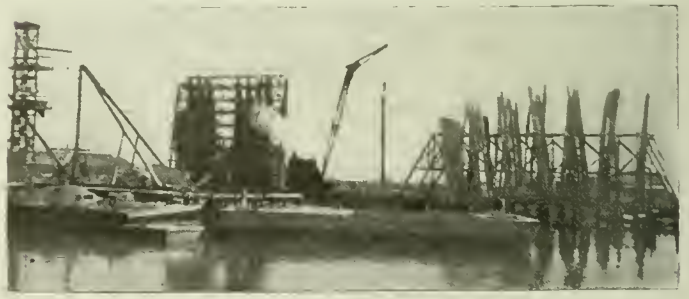


Fig. 3.—Crane carrying finished concrete piles to the curing rack.

The pilings were first placed some distance apart in the moulding rack, but as the work progressed, it was found that it was better to have them closer together, so now, six in a row are usually shot at one time.

The inventors of this sort of piling claim that the hollow core construction is more durable than pilings of solid concrete, and that cement applied in this way is impervious to the ravages of insects. It would be a hardy insect that would tackle so flinty a substance.

Another way of spelling success is application.

No use to wait for our ship to come unless we have sent one out.

ONE YEAR OF GROUP INSURANCE.

On the 21st of February 1920 the Spanish River Pulp & Paper Mills, Limited, instituted a system of insurance to cover all salaried and mill employees, and all salaried staff of the Woods Department. This insurance was placed with the Metropolitan Life Insurance Company; without cost to the employee and without medical examination.

The benefits which come to employees are based on the length of service with the Spanish River Company. As soon as a man has been employed by the Company for three months he is automatically insured for $500, and names the person to whom the amount is to be paid in case he dies. From $500 this amount of insurance increases, covering a period of ten years, until at the completion of ten years an employee is insured for $3,000 at death. At the same time the employee is insured against total disability. If an employee becomes permanently and totally incapacitated while working for the Company he will receive the full amount of his insurance in installments.

In addition to these benefits there is the visiting nurse service feature, at the Soo and Espanola. Under this plan there is available at the Soo and Espanola a registered nurse who will visit employees in case of illness when requested to do so by the employee or his family. The full benefit of this service has not been taken advantage of by the employees. Employees in the Soo who are taken ill and who are under the group insurance plan get in touch with Sister Dorothea at the General Hospital, who will immediately send a nurse to the home to give advice in the case. This nurse does not remain at the home, but makes visits as often as necessary, staying from a few minutes to several hours each visit as the case may require. At Espanola employees get in touch with the hospital, where the company nurse is always available for these particular cases. The service has not yet been put into operation at Sturgeon Falls because all efforts on the part of the Company and the Metropolitan Insurance Company have failed to secure the services of a nurse for that town.

Literature has been distributed every few months to all employees. This literature has covered various subjects in health and hygiene.

The following are the death claims which have been paid during the twelve months ending February 21st, 1921:

W. P. Cooper	Sault Ste. Marie	$ 500.00
M. Dooner	"	750.00
C. Lennox	"	500.00
J. James	"	2,250.00
J. B. Hughes	Espanola	1,000.00
G. P. Harris	"	500.00
J. Divett	"	500.00
D. McInnis	Sturgeon Falls	500.00
A. Kavanaugh	"	2,500.00
F. W. Rogers	Sudbury	2,750.00

These benefits total $12,250, which sum has been paid to the beneficiaries named by the deceased employees. The settlement of these claims, that is, the payment of these sums to the persons designated by the employees has taken anywhere from six to eight days after the necessary papers have been submitted.

Happiness depends quite as much on what we don't do as upon what we do.

SENATOR McCORMICK TO SPEAK AT BANQUET.

United States Senator Medill McCormick, of Illinois, former publisher of the Chicago Tribune, one of the leaders of the Roosevelt wing of the Republican Party in the campaign of 1912, has accepted an invitation to appear as the chief speaker at the convention banquet of the American Paper and Pulp Association, on Thursday, April 14. His subject has not yet been definitely announced, but he will discuss the relations of the paper industry and business in general to the developments of the day in the effort to bring the country back to normal conditions.

While the banquet is thus given its particular bright light, the arrangements are progressing rapidly for the regular business session earlier in the day. President Geo. W. Sisson, Jr., will deliver his address, and the report of the Secretary-Treasurer will be followed by committee reports, and then the symposium of discussions on various phases of the industry, as seen by prominent manufacturers from the different groups.

JOHN R. BOOTH AGED 94.

Ottawa, April 5.—John Rudolphus Booth, veteran lumberman and manufacturer, today celebrated his ninety-fourth birthday, and in a manner very much to his distaste, as, owing to a cold which he contracted some time ago, Mr. Booth has been confined to his bed.

NEWSPRINT REDUCTION.

Cut of $17 per Ton Announced by M. & O.

Minneapolis, April 5.—Directors of the Minnesota and Ontario Paper Company today announced a further reduction of $17 a ton on newsprint paper to publishers.

This concession, together with that of $8.00 per ton made on January 1, reduces the price from $138, as fixed by contract until July 1 next, to $113 per ton for the next three months.

ST. MAURICE EXTENDING.

The St. Maurice Paper Co., Ltd., of Cal de la Madeleine, Que., has awarded a contract to the George A. Fuller Construction Co., Montreal, for the erection of a number of additions to its plant, including mill extension, machine shop, pattern shop and other mechanical buildings. The work is estimated to cost about $400,000 including equipment.

A FORWARD STEP IN WELFARE WORK.

The welfare building of the Laurentide Company, Limited, which was completed last summer, is another indication of the forward-looking and progressive policy of the concern. The building is the centre of all community work and serves as the headquarters for the classes in Domestic Science, for the instruction of nurses' aides, for lectures to mothers on the care of the baby, and kindred welfare work. Moreover, all physical examinations of employees of the Laurentide Company are carried on there by a physician in charge of this work, and the building is fitted with a laboratory, complete surgical equipment and an X-ray plant not excelled in the province. Everything about the building and equipment is strictly up-to-date, and no expense has been spared to provide the best obtainable. The services of the building are available to all the local physicians.

The building is destined eventually to serve as a nucleus for a modern, 50-bed hospital, which will be built within the next few years. At present, the nursing staff, provided by the Victorian Order, live on the upper floor. These nurses, six in number, use the welfare building as their headquarters and carry the ideas which prompted its erection to the members of the community they serve, to the end that better conditions of health, and in that way greater efficiency and earning power may be developed.

One of the developments of the work has been the inspection of the children of the Laurentide School. This consists of a periodic examination of the children by a special nurse, for weak eyes, poor teeth and other defects that are sometimes overlooked by parents. It is planned shortly to institute educational work against contagious disease by means of a special nurse.

A feature of the work at the Welfare building is the holding each week of an infants' clinic. This is carried on by the local physicians who instruct the mothers in the care of the children. It is hoped during the summer months to have tents where the babies may be kept, should be there need of it.

Photo—Courtesy of "The Digester."

UNIFORMITY OF DIGESTER CHIP CHARGES.

How uniform are the weights of wood in the digester charge, the unit commonly used in chemical pulp-mill operation, is indicated by data obtained in a mill-scale study by the U. S. Forest Products Laboratory. For a period of three months at a certain mill, it was possible to weigh all the chips entering one digester, to make accurate determinations of their moisture content, and so to compute the actual amount of wood substance in each charge.

The chip charges for thirty-eight cooks showed the following variation in weight, after deducting for moisture.

7 charges weighed between 11,600 and 12,600 pounds.
24 charges weighed between 12,600 and 13,600 pounds.
7 charges weighed between 13,600 and 14,600 pounds.

Fifty per cent of the charges contained between 13,000 and 13,770 pounds of chips,—a variation in weight within the limits of plus and minus 2½ per cent. Delays of more than twenty-four hours occurred in starting all the cooks with charges of more than 13,770 pounds: and since it was customary before bolting down the cover to fill with additional chips the space left by the settling of the charge, the longer filling periods account for the larger amounts of wood in these charges. The cooks with charges of less than 12,600 pounds were started without refilling after the liquor charge was added, and it was anticipated that they would be light.

The weighing experiments indicate that the digester charge is, in most instances, a reliable unit for pulp-mill operation, provided the operation is uninterrupted and the soundness and species of pulpwood do not vary.

PULP AND PAPER NEWS

E. Stewart, director of the Spruce Falls Company, Limited, denies the report in a recent despatch from the north country that 1,000 men have been discharged from Kapuskasing. He says that about 300 bushmen have been paid off as their work has been completed. The sulphite mill will not be ready for operation before about July 1. So far as possible all help has been secured from Canadian agencies. Only a few experts were brought from the United States.

In Toronto paper stock circles it was felt that the declaration of the quarterly dividend of one per cent on the no-par-value stock of the Abitibi company has cleared the air, not only for Abitibi, but for other issues, particularly Brompton, as it is thought that it indicates dividend reductions only and not the passing of distributions.

The contract between the Ontario Government and the Provincial Paper Mills Limited, whereby the company gets a pulp limit of 1220 square miles and agrees to erect a paper mill in Port Arthur, includes a clause to the effect that the mill will supply all the book paper wanted by the Ontario Department of Education for a period of twenty-one years.

A. P. Rawsthorn, until recently connected with a London paper export house, has joined the selling force of the Fred. W. Halls Paper Co., Limited, Adelaide Street, W. Toronto.

F. L. Ratcliffe, of the Ratcliffe Paper Company, Limited, York Street, Toronto, has returned from a two months trip to Bermuda and Atlantic City.

The many friends in the paper trade of Charles S. Taylor, sales representative of Ritchie & Ramsay, paper manufacturers, Toronto, are congratulating him on his marriage a few day ago to Miss Monica Wood of Oakville.

At the annual meeting of the Barber-Ellis Company, Limited, Toronto, held a few days ago the following officers were elected: J. F. Ellis, president; F. M. Ellis, vice-president; C. G. Ellis, Brantford, George Scott, Toronto; Wallace Murphy, Winnipeg; Garfield Graham, Calgary; Lorne Graham, Vancouver; H. Holt, secretary-treasurer.

The Toronto office of the George H. Mead Company, of Dayton, Ohio, which was opened in the Bank of Hamilton Building about a year ago, was closed on April 1st and L. E. L. Harvey, who for some months has been the manager, has gone to Montreal. The Canadian sales of the Spanish River Pulp and Paper Mills, Limited, which had previously been handled by the George H. Mead Company, as selling agents, will now be handled from the Spanish River office at Sault Ste. Marie. The office in the Bank of Hamilton Building vacated by the Mead Company, has been taken by T. H. Watson of the Canadian Machinery Corporation, Limited, Galt, Mr. Watson being also a director of the Spanish River Company.

According to word from Haileybury a great deal of interest is developing in that district over the report that negotiations are under way with a view to erecting a large pulp mill on the shore of Lake Temiskaming, at Dickson's Creek, about half way between Haileybury and Liskeard. It is stated that those behind the project have already advanced several thousand dollars in securing the site and an endeavor is being made to secure assurance from the township of Bucke that the fixed assessment of the plant shall not exceed $20,000 for a term of twelve years. Provided the project is carried through, it will be of vital importance to Haileybury, the county seat of Temiskaming, owing to the declining support coming to the town from Cobalt, where the number of men employed has declined nearly 60 per cent during the past year. It would also provide use for the Hydro-electric power being generated at the plants which have supplied the mines of Cobalt.

The death took place in Toronto last week of Harvey Nelson Barry, business manager of the Farmers' Sun, at the age of 60 years. Deceased had been a resident of Toronto for the past twenty years, having joined the staff of the Sun which the late Goldwin Smith was associated with.

Mr. W. L. Bulman of Bulman Bros. Winnipeg was in Montreal this week.

Gen. J. B. White, Chief Forester for the Riordon Company, states that his department has been very successful this year in getting the company's requirements for logs cut early and hauled to the landings. He says it is not time yet to worry about whether there will be sufficient water for driving.

Word is received from St. Johns, N.B. that the Paper Box Mill, established there by Clark Bros. will be in operation this week and that the Sulphate Pulp Mill of the company at Bear River, N.S., will be in operation next week.

Mr. G. C. Piche, Chief Forester for the Province of Quebec, has booked passage for France for April 21st. He will sail direct to Havre and after touring the forest regions of France and interviewing the Forest Departments, will proceed to Scandinavia where he will join some of his students who have preceeded him.

Messrs. Guay and Landry of the Provincial Forest Service, are studying aerial photography in France and Belgium in preparation for extensive mapping of Quebec forests by this method during the coming summer.

Mr. Lussier has been studying forestry conditions in France and Switzerland and is now in Scandinavia. His studies have carried him beyond the Arctic Circle in Lapland and he has obtained much valuable information and experience which will be made use of in improving forest conditions in Quebec.

Mr. Edward Beck, in charge of publicity for the Canadian Pulp and Paper Association is confined to his house this week by illness. His many friends will wish him a speedy recovery.

Technical Section

REVIEW OF RECENT LITERATURE.

B-9. Alaska the future source of newsprint supply. Paper, 9-10, 34, (Aug. 4, 1920). A discussion of the possibilities of establishing a newsprint industry in Alaska, showing that "within 5 yrs. newsprint from Alaska, should be a fairly common commodity on the market in the U. S."—A.P.-C.

F-5; H-3. Curtailing bleach consumption by adding sulfur to digester liquor (in the soda process). GEORGE K. SPENCE, Soda Pulp Committee, T. A. P. P. I. Paper, 19-21, (Sept. 8, 1920); Pulp & Paper, **18**, 1039-40, (Oct. 7 1920). The data and results of 35 exptl. cooks in which no S or Na_2S was used and of 35 exptl. cooks in which 1.1 lb. of S was used per 100 lb. of stock cooked are given. The use of 1.1 lb. of S in the liquor resulted in a saving of 0.92 lb. of 35% bleaching powder. If this were the only virtue to be considered there would be very little advantage in its use under normal conditions. As it is claimed, however, that the use of S increases the yield and strength of stock, this will be investigated.—A.P.-C.

K-6. Pitch in waste paper stock. THOMAS F. HEBERLY, Schmidt & Ault Paper Co., York, Pa. Paper, 12, 48, (Sept. 22, 1920). Description of the trouble and harm caused on the paper machine by pitch and asphaltum from waste container board and impregnated paper. So far the only remedy has been to cull out that grade of paper; but this is not always an easy thing to do. A reclaiming process is being perfected; but this will entirely destroy the paper and reclaim the insulating and waterproofing materials.—A.P.-C.

K-9. The use of China clay in tinted papers. China Clay Trade Rev. Paper, 22 36, 46, (Sept. 22, 1920). A discussion of the important function China clay performs by combining with dyestuffs in the beater, thereby preventing mottling.—A.P.-C.

K-10. Substitutes for alum in paper sizing. W. E. BYRON BAKER. Paper, 16, 30, (Sept. 29, 1920). Sizing paper in the beater depends upon the decomposition of rosin size soln. in the beater by the action of a soln. of an acid or a salt containing a large proportion of acid in a neutralized form. The decompn. of the size soln. consists of the liberation of free rosin in a finely divided condition, which takes place because the soda in the size soln. has a stronger affinity for the strong mineral acid in the pptg. agent. The bulkier the size ppt. the better will be the distribution of a given wt. of size (rosin) among the fibers in the beater. The bulkiness of the ppt. produced is therefore as important in the selection of pptant. as its size pptg. power. Alum produces the bulkiest ppt. because of the affinity of the basic Al compds. for the water, and their ability to form highly colloidal and gelatinous ppts. by absorption of water; and its size pptg. power is good as it contains abt. 40% SO_3. As a substitute for alum one of the best procedure is the use of niter cake ($NaHSO_4$) to replace half the alum. If used alone it will not produce nearly so bulky a ppt., so that to size to the same desired sizing strength it may be found necessary to increase the amt. of size per t. Half as much H_2SO_4 as $NaHSO_4$ may be used, but it does not produce so bulky a ppt. as the latter. With some pulps it is impossible to get so hard sized paper with H_2SO_4 or $NaHSO_4$ as with alum; and there is little doubt that in such cases the basic Al-resinate assists considerably in obtaining the desired effect. $FeSO_4$ causes discoloration of the paper (either through combination with residual lignocellulose in unbleached pulp, or with the rosin when using bleached pulp) and impairs the strength of the sheet due to alternate oxidation and reduction of the Fe by atmospheric influences, resulting in the destruction of the cellulose by the formation of oxycellulose. $MgSO_4$ and $ZnSO_4$ form bulky ppts. and have a slightly lower pptg. power than alum. They leave a neutral "back water" in the beater, which is specially useful—when using viscose in the size. Certain other sol. sulfates, the chlorides of the above metals, or HCl could also be used, but they are more expensive and no more efficient.—A.P.-C.

K-12. Changing light to heavy sheets. World's Paper Trade Rev.; Paper 10, (Sept. 15, 1920). Get the correct speed by careful timing and not by guess work. The quality of stock and formation of the paper must be carefully considered. If the stock has a tendency to be slow, always heat the stock and water quite hot before starting up. After starting see that the stock is working without undue strain on the suction boxes, then the steam may be gradually shut off. Start without any weights on the couch rolls and do not be in a hurry to put the shake on; wait until water and stock are well regulated. Do not start up too heavy. Start up at least 30 lbs. light to get an idea how the stock is going to act; then regulate the water, steam, slices, etc., accordingly, bringing the paper gradually up to wt. Suction boxes should be equipped with automatic relief valves, to prevent injury to the wire, or possible ripping it off.—A.P.-C.

K-12. Papermachine shutdowns: causes and effects on production. Papeterie, **42**, 641-5, (July 25, 1920); Paper, 19-20, (Sept. 15, 1920). Translation by A. Papineau-Couture.—A.P.-C.

K-12. A new fireproof hood for papermachines. F. M. WILLIAMS. Paper, 12, 30, (Sept. 29, 1920). Wood as a material for hoods for paper machines constitutes a fire-hazard, rots readily, shrinks and swells and opens up cracks which destroy fully or in part its function as a collector of moisture, and has to be renailed relatively frequently as the nailheads rust off. Iron or steel rusts quickly and sheds dirt on the paper unless it is continuously painted. Asbestos lumber is free from all these defects, and is used by the author for the manuf. of hoods which are made in the factory and can be assembled over the machine in a short time.—A.P.-C.

K-12. A new felt-cleaning device. C. A. WOODCOCK. Pulp & Paper, **18**, 934-4 (Sept. 9, 1920); Paper, 20, 28, (Sept. 29, 1920). Clear water or a soln. of a suitable cleansing substance is supplied to either side of the felt, preferably—for the average mill—the dirty side or that side which comes in contact with the web, to loosen the foreign material deposited thereon.

Thereafter a suction effect is applied to the dirty side of the felt to open the meshes and remove the water and material which has been freed thereby. Figures are given from actual mill production with and without the device to show the increase in output and saving in fuel which can be effected by its use.—A.P.-C.

K-12. The life and use of fourdrinier wires. Paper, 15, (Sept. 29, 1920). A plea for cooperation between the papermaker and wire mfr. The greatest abuses of wire are: excessive use of acid, misalignment, excessive suction.—A.P.-C.

K-12; M-5. Repair hints. Paper, 28, (Sept. 29, 1920). Hints on repairing holes in the surface of roll coverings made of rubber, mahogany, drying cylinders, wet felts, wires, jackets, bronze and other metal rolls. —A.P.-C.

K-21. Waterproof material. Tarred roofing paper. Can. patent No. 203,762. The Barrett Co., New York City, Assignee of RAY POTTER PERRY, Upper Montclair, N.J., Sept. 7, 1920. The process of producing a construction material which comprises the steps of forming a thin sheet of mixed fibrous and comminuted waterproofing materials on a paper-making machine, superposing a plurality of said sheets on each other, and subjecting said sheets to heat and press. so that the bituminous material becomes fused and the sheets firmly united. Claims allowed 14.—A.P.-C.

K-21. Insulating material. Can. patent No. 203,764, The C. F. Burgess Laboratories, Assignee of HOWARD F. WEISS, Madison, Wis., U.S.A., Sept. 7, 1920. The method of mfg. composite insulating material which comprises shredding fibrous material, depositing the fibers on a support to form a layer of the desired thickness, subjecting the layer of deposited fibers to suction, treating the fibers with an adhesive to cement them together, drying the mat thus produced, and cementing to each surface of the mat thus produced a sheet of fabrics. Claims allowed 13.—A.P.-C.

K-21. Felt. Can. patent No. 203,765, The C. F. Burgess Laboratories, Assignee of HOWARD F. WEISS, Madison, Wis., U.S.A., Sept. 7, 1920. As an article of manuf., a felt comprising a compressed fabric of wood fibers in which the fibers are cemented together by a water resistant adhesive and prior to the compression were cemented together in heterogeneous arrangement with the fibers extending in all 3 cubical dimensions. Claims allowed 10.—A.P.-C.

K-23. Treatment of fibrous material to render it substantially non-absorbent and non-conductor. Can. patent No. 196,117, WM. WEIMAR, Appleton, Wis., U.S.A., Jan. 13th, 1920. The material (wood or the like) is immersed in a hot satd. NaCl soln., removed, superficially dried, cooked in a soln. of S and resin with the S maintained at its boiling point, then removed from the latter soln. and quickly cooled. Claims allowed 4. —A.P.-C.

K-23. Machine for impregnating paper. 140,861, C. W. MAYER, Rochester, N.Y., U.S.A. (Same as Fr. patent No. 497,476). To provide improved means for saturating the web with any desired substance capable of being forced into the paper while using the minimum amount of substance. A further object is to saturate webs of the lightest tissue with the minimum amount of saturating material. A further and important object is to provide full control at all times with reference to speed pressure and amount of saturating material employed.

K-24. Cover for rolls of paper, etc. Can. patent No. 203,629, EMIL GAGENBERG, Dusseldorf, Germany, Aug. 31, 1920. A paper roll provided with a cover that extends over the face of the roll and is provided with a pair of inwardly turned flanges that extend over the ends of the roll, each of the flanges being formed of a plurality of folds, and with a hardening adhesive carried by the cover, and adapted to stiffen the flanges and fix the folds thereof. Claim allowed 1.—A.P.-C.

L-5. Paper bottle. U. S. patent No. 1,342,769, A. J. SELZ, Assignor to Paper Bottle and Can Co., Inc. Wilmington, Del., U.S.A. A paper bottle of a single blank having a rectangular bottom, 2 oppositely arranged vert. bottom flaps projecting from the bottom and 2 pairs of oppositely arranged vertical overlapping side members, and folds extending partway the length of the bottle to gradually decrease the size of the upper part of the bottle to its stop. Claim allowed 1.—A. P.-C.

L-5. Artificial silk manufacture in Poland. U. S. Com. Rep., July 28, 1920; J. Soc. Chem. Ind., **39**, 322R, (Sept. 30, 1920). It is stated that the artificial silk factory at Tomaszow, established some yrs. before the War, will shortly start work again. Great obstacles have been met with in restarting the factory owing to the shortage of the raw materials required viz., cotton, ethyl alc. ether and H_2SO_4 and HNO_3. The prewar daily output was 1500 kg., and it is now proposed to start producing about 500 kg. a day.—A.P.-C.

L-5. Artificial silk industry in Italy. U. S. Com. Rep., July 26, 1920; J. Soc. Chem. Ind., **39**, 322R, (Sept. 30, 1920). It is announced that the Societa di Navigazione Italo-Americana, which recently increased its capital and extended the scope of its activities, will shortly construct several new plants for the manuf. of artificial silk, which will probably be located at Turin, Naples, Orbassano and Bra, and it is expected that at least 10,000 workers will be employed. The S. N. I. A. Co. through the controlling interests which it holds in the "Cines Seta Artificiale" Co., the "Viscosa" Co. of Pavia, and the "Societa Italiana della Viscosa" of Turin, already holds the dominating interest in the Italian artificial silk ind.—A.P.-C.

L-5. The artificial silk industry in Belgium. C. LEMAIRE. L'Age de Fer, **36**, 312-3, (May 10, 1920). Before the War Belgium produced one-quarter of the total world production of artificial silk, and its present production is 32% lower than in 1914. The principal works are at Tubize, Obourg, Maransart, and Alost, and employ about 6,000 hands. The 3 first-mentioned works employ the Chardonnet process (Cellulose nitrate), and the fourth uses the viscose process. This latter process is shortly to be started in the Tubize and Obourg factories. Owing to economic conditions the ind. is laboring under severe handicap as regards its equipment and its raw materials; but nevertheless it is fairly prosperous at the present time. An investigation of the hygienic and sanitary conditions of one of the principal works has shown conclusively that the shops and buildings are all that can be desired in this respect, and that what slight traces of ether and alcohol vapors do get into the room are not present in sufficient quantities to affect the health of the workers in any respect.—A.P.-C.

M-9. Cost of operating motor trucks. Paper, 26, (Sept. 15, 1920). An analysis of truck-costs, based on the ton mile as divided between gasoline, lubricants, tires, repairs and sundries, depreciation, chauffeur, license, insurance and taxes, storage, and interest on the total investment in the vehicle.—A.P.-C.

UNITED STATES NOTES

Officials of the American Writing Paper Company, as well as the company's entire office staff, have accepted a cut in salaries ranging from 5 to 20 per cent. The schedule embracing these cuts went into effect April 1st, barely a month after a similar reduction for the operators' wages.

The regular quarterly payment on the preferred stock of International Paper Company was declared last week. There has been talk that a dividend on the common might be authorized in view of the company's excellent earnings last year, which were at least equal to those for 1919 when net was equal to $13.24 a share on the stock.

Representatives of the country's book and job printing shops, in Cincinnati, Ohio, last week, launched a national organization of employing printers, operating both closed and open shops. This association is to be known as the National Forty-eight Hour League of America. Resolutions were passed unanimously pledging that all shops represented by the association absolutely refuse to accede to any demands from any labor union, at any time to operate their shops on the basis of a work week of less than forty-eight hours.

According to a report given out in Washington last week, based on a statement from an authoritative source, the new tariff—schedules of which are now being prepared by sub-committees of the House Ways and Means Committee—will place lumber, with few exceptions, on the free list. Wood pulp, it is stated, will be allowed to enter the United States free of duty, provided there is no evidence of retaliation by Canada following the enactment of the proposed tariff. Subcommittees dealing with these schedules, are said to have tentatively agreed that lumber, with three or four exceptions, shall be duty free. The exceptions include rough fir, spruce and cedar shingles and logs, which come into competition with the markets of Oregon and Washington. There will be many ad valorem duties on the bill because of the unsettled condition of the world markets, which makes it difficult and in many instances impossible to enact specific duties. Present indications are that the bill will not be ready for presentation to the House much before July.

The New York Tribune last Saturday printed a special despatch from a correspondant in Germany telling of a proposed increase in price of print paper amounting to nearly double the present cost and approximately 20 times the pre-war figure. Newspaper publishers are protesting against the proposal, asserting that any such increase would be ruinous to their business. The publishers throw the blame for the proposed increase upon the government and the Reichstag. They declare that any advance in the price of newsprint would be unjustifiable at a time when overproduction is burdening all parts of the world and when the German paper mills are making unheard of profits.

Frank E. Dunaway of 501 Fifth Avenue, New York met with a serious accident in Atlantic City Monday March 28th, having fractured his knee cap of right leg. He met with a similar accident August 22, 1917, at that time having fractured knee cap of left leg. Mr. Dunaway will return to New York as soon as he is physically able to be moved to The Broad Street Hospital.

LEAVE A. W. P. FOR NUERA.

The Nuera Paper Company, Inc., Hadley, N. Y., now has the services of four men recently with the American Writing Paper Co. Mr. W. J. Blackley is to be General Sales and Publicity manager, with Mr. C. H. Blackley as his assistant. Mr. Walker will look after the manufacturing end, with Mr. Bush as his assistant.

Mr. Walker has been connected with the paper business for the last twenty-five years, during which time he was connected with the Chemical Paper Company, Holyoke, Mass., Taylor-Logan Company, Holyoke, Mass., and the Erving Mills at Erving, Mass. For the last year and a half he has been superintendent of the Crocker Division of the American Writing Paper Company, and for the last year has been superintendent of both the Crocker and Albion Divisions of the American Writing Paper Company.

Mr. Bush, prior to his connection with the American Writing Paper Company, was with the Chemical Paper Company, Holyoke, Mass.

Mr. W. J. Blackley was with the Niagara Paper Mills, Lockport, N. Y. from August 5th, 1909 to February 13th, 1919, when he joined the American Writing Paper Company, 1919 as a member of the Sales Department, and at the time of his resignation was manager of the Specialties Section, Dept. of Sales.

Mr. C. H. Blackley was for nine years connected with the Fibre Corp., Lockport, N.Y., first, as superintendent of the Conduit Department and later as superintendent of the Hard Fibre Department.

The Nuera Paper Company has at present two Fourdriniers and one cylinder machine. Foundation for a fourth machine is laid and part of the machine is ready. It has not been decided as yet whether to install a cylinder or Fourdrinier machine.

The Nuera Paper Company will manufacture colored specialties and plans later on to have two or three stock lines of cover papers.

P. T. DODGE ON NEWSPRINT PRICES.

New York, April 5.—President Dodge of International Paper Company, believes paper prices must stay relatively high for a year or more. This should indicate good earnings in 1921 if the prediction of Mr. Dodge is correct. Traders are looking forward with interest to the forthcoming annual report. It is claimed the company last year earned more than $60 a share on common before charges. Therefore the amount the company will charge off for amortization and depreciation will be interesting. Estimates as to balance available for common stock last year ran above $30 a share. Depreciation item will be main factor in determining earnings for 1920.

If you know a printer who shows himself more anxious to work out a successful answer to your problem than to quote the lowest price—Go to him. His is the real bargain.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, April 2.—Unchanged conditions, generally speaking, with further reductions in some lines of paper, have marked the Canadian pulp and paper trade during the past week. There has been no real improvement in business, although the fact that what orders are being placed carry with them a request for immediate shipment would indicate that stocks are fast reaching a point where they have to be replenished. Mills are out after business in lines of both pulp and paper and in no department can orders be had without hard digging. The market for paper still shows a downward tendency and pulp is being offered at lower prices than have hitherto prevailed, although few transactions are being recorded, and there is no stable market. It is stated by one man in close touch with the pulp situation that bleached sulphite is being called for somewhat more freely. The fact that a few months ago the commodity began to show a sharp decline in price is not taken as any sign of a collapse in the industry but merely as a seasonable and timely incident as part of the changed condition in manufacturing circles in Canada generally. It is stated that orders are beginning to come in a bit more freely now and manufacturers are anticipating increased business. It is also significant that there is now growing up a demand for sulphite for the manufacture of a certain quality of silk, from which is manufactured probably the greater proportion of such articles as stockings, ties, etc. now being sold. In view of the fact that these silk mills are operating actively at the present time, it should mean that sulphite will have an additional field for use which will add considerably to its demand. While some of the pulp mills are operating light, it is stated that such institutions as the Riordon Company are running at very nearly capacity, which is taken as a sign of the healthy condition of the industry.

KRAFT PAPER.—Kraft pulp is still quoted at $80 a ton, with kraft paper at 10c a pound and the demand is still light. It is stated, however, by a man in close touch with the kraft market that there have been indications of a loosening up process and that some orders are beginning to come in for immediate delivery, which is taken to indicate that the market is bare of supplies and that the demand for this class of paper is likely to show an increase very shortly now.

TAG MANILA.—This line of paper is being handled in limited quantities and the market is still considerably off and the demand quiet. The price to the jobbers is 7½c. as against 12½c. at the first of the year. Envelope manila, which was 14½c. at the first of the year is now quoted at 10c.

BRISTOLS.—Bristols are down 4c a pound, with a price of 10½c. to 16c. to jobbers, according to grade, as against 15½c. to 25c., which prices prevailed at the beginning of the year. There has been very little reduction in cover papers which range from 13c. to 23c., the top price three months ago being in the vicinity of 25c. a pound.

COATED PAPER.—Coated paper mills are fairly busy and have, perhaps, been less affected by the paper slump than most other paper manufacturing lines. One or two of the mills report a satisfactory volume of business ahead in unfilled orders and a few of them are under the necessity of stocking up the product of their machines. There has been some slight readjustment of prices to the jobbers during the past few days. No. 1 coated is now 18½c.; No. 2, 17½c.; tints and colors 19c.

WRAPPING PAPERS.—The wrapping paper trade continues to be dull and the mills are hot after business. It is believed that the consuming public is close to the point where it has to buy paper. This is indicated by the character of the orders coming in, which are small in bulk but are invariably accompanied by requests for immediate shipment.

ENVELOPE TRADE.—Envelope manufacturers are complaining of a considerable falling off in trade since the paper slump set in and that a comparatively small volume of business is being done. A leading manufacturer expresses the conviction that the present high postage rate on letters is responsible to some extent for the lessened demand, combined with the general drop in paper, and he is inclined to the belief that the reinstatement of the old penny postage would greatly stimulate the envelope business if the Government could see its way clear to forego the collection of the extra cent.

TISSUES AND TOILETS.—The week has seen a drop of 15 per cent in tissue paper and 10 per cent in toilets. There has been little improvement in the volume of sales recently, which continues to be comprised of small lots with big orders at a premium. Business generally in this department of the paper trade is dull and the mills are digging for business in company with the jobbers. Manila tissue, 24 x 36-12 is now quoted at $1.45; 20 x 30-8½, $1.05; No. 1 white, 24 x 36, $2.15; 20 x 30, $1.55; ten-pound cap, 24 x 36, $1.65; 20 x 30-7, $1.15.

.. NEW YORK MARKETS.

New York, April 2—(Special Correspondence)—Notwithstanding that some improvement in demand for several grades of paper is reported, the market as a whole remains in a very quiet condition. Buyers in general are operating in cautious fashion, confining their orders almost solely to paper directly required, and with most consuming trades experiencing unusual dullness, the need for paper of any kind is far below normal proportions, with the result that current demand does not commence to approximate that of more ordinary times when general business is better than it is today.

Certain grades of fine papers are reported moving in a little larger volume. Obviously the demand for writing paper at present runs mainly toward the cheaper qualities, and it is these lines that are sought by printers and stationery manufacturers in somewhat increased quantities. It is also stated by some members of the trade that tissue paper is in better call and that recent sales have involved slightly larger amounts than previously. The flurry of demand for these kinds of paper, however, has not changed the tenor of the market. Most grades of paper are moving in very light volume. Spot demand has almost disappeared, and were it not for contract business, activity in most branches of the trade would be close to a standstill.

As an apt illustration of the condition prevailing at mills, announcement was made this week by one of the large paper mills in Maine of the first curtailment in working hours since the plant was built 15 years ago, the operating schedule being reduced to four days per week. Reports from various parts of the country tell of increasing curtailment of paper production; this being made necessary by the light demand for paper and the refusal of manufactures to pile up additional stocks of their product under present unfavorable and uncertain market conditions. It is authoritatively stated that the average paper mill in the United States has sufficient stock of finished material on hand to supply a month's normal demand, and few or none of them are willing to augment these stocks while being so much in the dark as regards what the future will bring forth.

If anything, the market for newsprint is growing worse instead of showing improvement. There is very little demand for print paper for spot delivery; in fact, reports have been heard of some publishers endeavoring to resell a part of their contract supplies because of the decrease in consumption and their resultant lack of need for all paper they have bought on contract. Offerings of imported newsprint are being made at startlingly low prices. At least one sale, involving 100 tons of foreign newsprint, was recorded several days ago at 3.50 cents per pound ex the warehouse in this country. Moreover, this paper was of Swedish manufacture and compared very favorably in quality with domestic and Canadian newsprint. As would be inferred by this transaction, there are quite a few distress lots of imported print paper in the hands of importers or others who are letting go of stocks for whatever can be realized from buyers. This naturally affects the market for domestic newsprint and publishers are repeatedly insisting on further cuts in price before they will place orders. It is difficult to say just what is the spot value of newsprint. Domestic roll news for spot shipment can be bought at 5 cents per pound, and, in all probability, at substantially less. There has been no further change reported in contract quotations.

Sales of No. 1 domestic kraft wrapping at 7.50 cents a pound at mills have been noted, representing a slight decline. Tissues hold fairly steady at about $1 per ream for No. 1 white, with No. 2 white and No. 1 manila quoted at around 85 cents a ream. Book papers are in an easy market position with mills quoting at a basis of about 8.50 cents per pound on machine finished book but with the probabilities in favor of buyers securing some supply at further concessions.

Boards are in dull demand and there is scarcely a mill in the country, according to reports, that is operating more than 50 per cent. of capacity. Plain chip board is freely offered at $30 per ton f.o.b. mills and is meeting little worthwhile demand, while news board is bringing only in the vicinity of $35 a ton at mills.

GROUND WOOD.—Sales of mechanical wood pulp have been reported this week placing prices on new low levels for the present downward movement of values. Prime spruce ground wood for prompt delivery has sold at $35 per ton f.o.b. grinding plants, it is stated on good authority that this is about all consumers will now consider paying. There is a very limited demand for ground wood. Newsprint mills are doing little or no buying, board manufacturers are absorbing supplies in spasmodic fashion and in light tonnage, and other consumers are keeping mostly out of view as buyers. The result is that those producers attempting to market pulp find that they must accept almost any price offered in order to effect sales. Moreover, there is little indication of improvement in the market until activity in the paper trade broadens, because papermakers seem determined not to absorb raw material until their actual requirements necessitate their doing so.

CHEMICAL PULP.—The market for chemical wood pulp is decidedly quiet and quotations are irregular and on a broad range. There is no such thing as an established market price on any grade of pulp today. Producers quote one price, and invariably accept a much lower figure when customers make counter offers. Sales have been reported within the past several days at surprisingly low levels, and while the cases cited may be the exception rather than the rule, they at least indicate how cheaply some buyers are getting pulp.

Foreign bleached sulphite has actually sold on spot in New York at 6 cents per pound ex warehouse for strictly No. 1 pulp, while a sale of domestic sulphite of book paper quality at 3.75 cents f.o.b. producing mill has been noted. News grade sulphite of so-called No. 2 grade is being offered at 3 cents a pound and yet dealers claim that this pulp is of identically the same quality as No. 1 news sulphite, for which manufacturers ask 3.50 cents. Kraft pulp is quotably lower at between 3.25 and 3.50 cents a pound for No. 1 domestic and 3.50 cents for Scandinavian kraft, while business has been done in southern pine kraft pulp down to 2.75 cents. The quotable basis on domestic No. 1 bleached sulphite is around 6.50 cents a pound at mills, but with foreign bleached sulphite available at 6 cents, it is obvious domestic manufacturers are experiencing difficulty obtaining more than this figure for their pulp.

RAGS.—The cotton rag market is characterized by a dull condition similar to that existing in other papermaking raw material lines. Demand from consumers is unusually narrow, and those few mills operating as buyers are absorbing on the whole but negligible amount of rags. Prices are very uncertain, and they play but a minor part in the consummation of business under prevailing circumstances. If a paper mill needs stock it comes into the market and buys the rags wanted, paying close to the prices dealers ask; if consumers are not in need of rags they cannot be prevailed upon to absorb supplies regardless of the figures quoted by sellers. Dealers themselves frankly say they are not aware what rags are worth owing to the light volume of business current and the lack of an established price basis on any grade.

New white shirt cuttings are offered at 12 cents per pound f.o.b. shipping points without attracting buyers, while new washables are available to mills at 6 cents at shipping points, new light silesias at 7.75 cents, fancy shirt cuttings at 8 cents, blue overall cuttings at 8 cents, unbleached muslins at 11 cents and white lawns at 11.50 cents. Old No. 1 repacked whites are quoted at around 7 cents, thirds and blues at 2.50 to 2.75 cents and roofing rags of No. 1 quality at 95 cents to $1.

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INQUIRIES SOLICITED

PAPER STOCK.—Prices on old papers have continued to recede in a market devoid of important trade activity. Old No. 1 books and magazines have sold to mills at one cent per pound f.o.b. New York, No 1 old kraft paper at 1.60 cents, white blank news cuttings at 1.65 cents and No. 1 soft white shavings at 2.25 cents. Folded newspapers have been purchased by board mills at as low as 45 cents per hundred pounds at shipping points, and the slight buying of No. 1 mixed papers has been mostly at a price basis of about 30 cents a hundred. The market as a whole displays exceptional dullness. Consumers are said to be buying in lighter volume than the present generation of paper stock dealers can remember, and indications are that were it not for the fact that prices already are at considerable below the cost of production, they would go a good deal lower.

OLD ROPE AND BAGGING.—A little demand exists for old manila rope at a price of around 4 cents per pound for No. 1 rope at shipping points, and mixed strings are moving in scattered directions at about one cent per pound, but old bagging is in a dormant market condition and is strictly nominal in value. Dealers quote around 1.25 cents on No. 1 scrap bagging and about 1.50 cents on gunny but very few orders are materializing.

News From Our Advertisers

Ball Bearings for grinders and Jordans.

The elimination of power and oil wasting friction is one of the principal problems of the mill operator. Ball bearings are being constantly more widely used.

Fig. 1 shows the application of S K F ball bearings to a pulp grinder. This design is arranged with a wide felt groove, a grease groove and a water flinger to protect it from the intrusion of water or any other liquid.

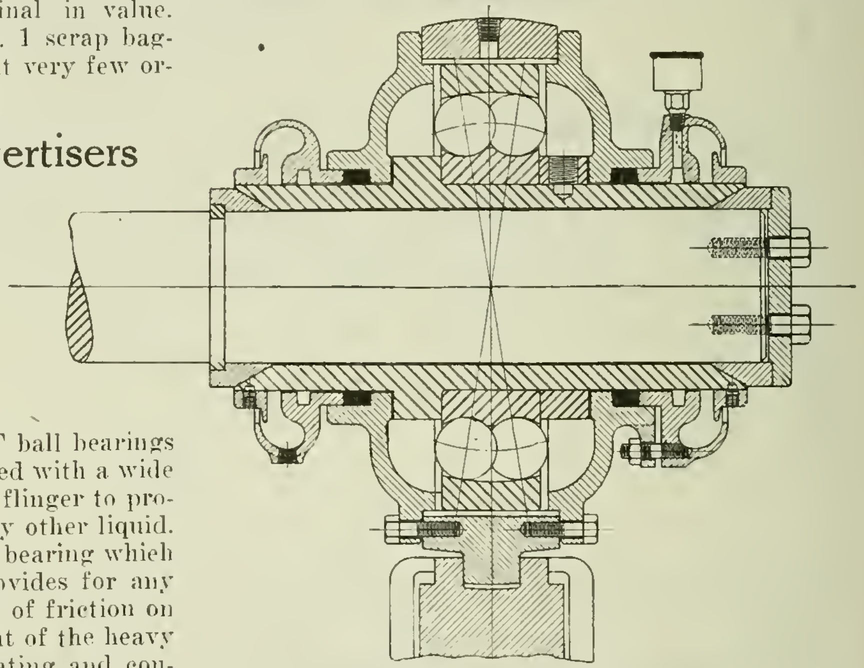
The self-aligning feature of the S K F bearing which is well brought out in this drawing provides for any spring or disalignment. The elimination of friction on these bearings is considerable, the amount of the heavy loads carried and the freedom from heating and constant replacement, which is necessary when wood or water cooled bearings are used.

Fig. 2 (on page 392) shows the bearing lay-out in detail for Jordan engine application.

The high speed of this machine, together with the heavy loads carried, uses up a great deal of power in a plain bearing, roughly 30% more power is available in a ball bearing machine than a plain bearing. The speed can be increased and the results have shown that a great increase can be made in the stock fed into a ball bearing Jordan. The plug is held absolutely in the centre of the shell, which means a very uniform stock of great fineness, besides the saving in lubricant and attention.

The heavy type radial bearings are shown to carry the load, and the double row self-aligning thrust bearing to take the end thrust.

The application is adjustable endwise, and the housings are sealed to keep out injurious liquids.



RECORDS COMBUSTIBLE FLUE GASES.

A new departure in combustion control devices is described in an illustrated bulletin recently issued by the Mono Corporation of America, 25 West Broadway, New York City. The Duplex Mono, as it is called, is unique in that it automatically analyzes and records the combined percentages of three combustible gases (CO, CH_4 and H_2) during all such times as any or all of these appear in the flue, while it also produces a continuous accurate record of the percentage of CO_2. Both records are on one and the same chart. This is of a

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Paramine Brown G. conc.
Paramine Brown M.
Paramine Fast Bordeaux B.
Paramine Green G.
Paramine Violet N.
Paraphenine Yellow G.
Diazamine Fast Yellow H.
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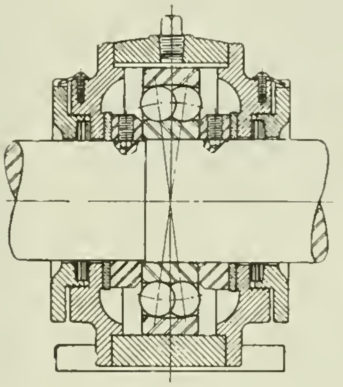
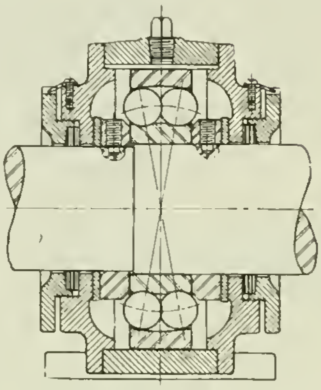
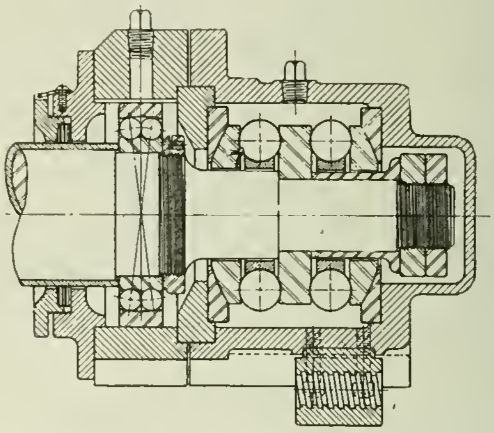
new type, and very clear and easy to read. The bulletin emphasizes the serious losses which frequently occur in boiler plant furnaces on account of the escape of unconsumed combustible gases. This may occur at any time, but happens especially when high CO_2 records are attempted under the guidance of flue gas analyzing instruments recording CO_2 only, even when supplemented by an occasional snap test for CO. With the Duplex Mono as a guide, the fireman soon learns to regulate his fires and drafts to avoid the escape of combustible gases while holding CO_2 at the highest possible percentage at all times. Should combustible gases appear when the percentage of CO_2 is less than the allowable percentage at which experience with the particular furnace in question has proven it possible to operate under any set of conditions, he knows there is something wrong requiring immediate attention. The plant executive is given a permanent record which gives him the data necessary to compute the degree of efficiency attained in firing, and offers him every opportunity to intelligently select his fuel, make alterations or repairs, and supervise the efforts of the firemen.

EXHIBITION IN LONDON FOR PRINTING, PAPER, BOOKBINDING, AND ALLIED TRADES.

Under date February 25, Trade Commissioner Harrison Watson, London, writes as follows: "The organizer of the Printing, Paper, Stationery, Bookbinding, Boxmaking, and Allied Trades' Exhibition which is to be held at the Royal Agricultural Hall, London, from April 30 to May 14, desires the exhibition and congress to be brought to the notice of Canadian printers, lithographers, bookbinders, newspaper proprietors, etc., in the hope that some may be over in England at that date and will attend the congress.







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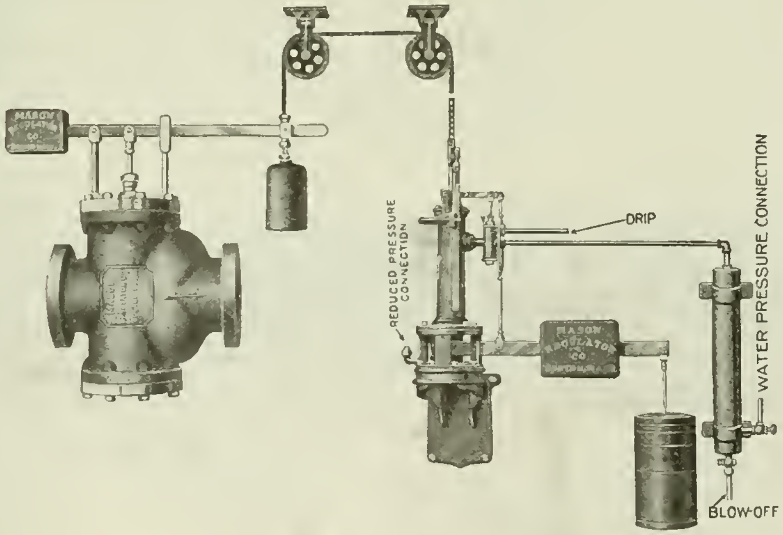

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A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XVIX. **GARDENVALE, P. Que., April 14th, 1921.** **No. 15**

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J. NEWELL STEPHENSON, M.Sc., Editor.

The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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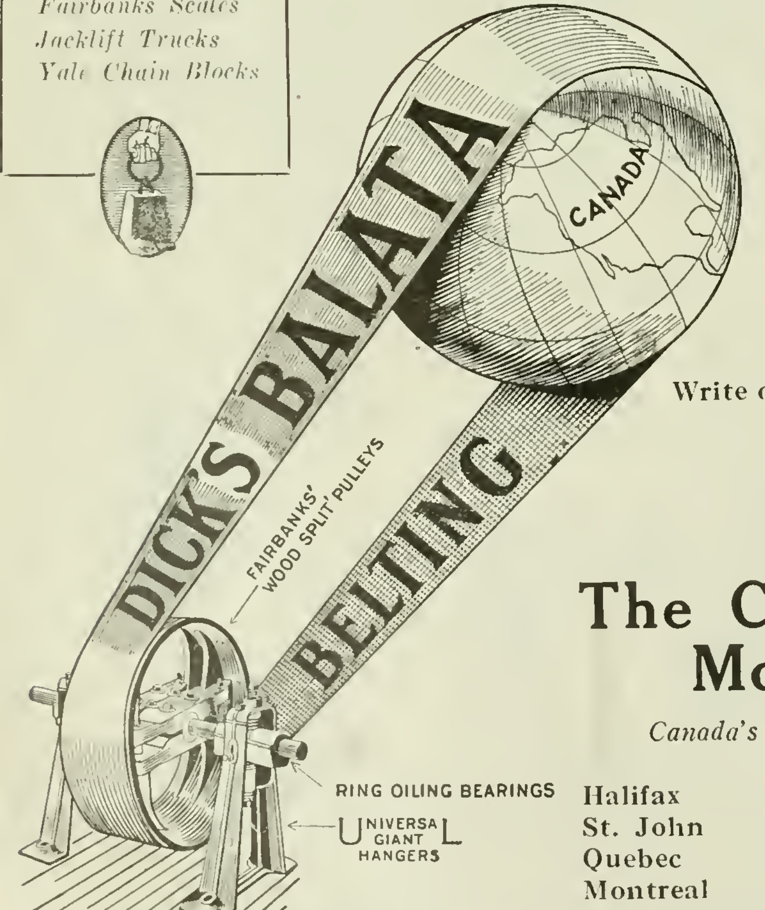

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EDITORIAL

RIVALS OR PARTNERS?*

Mr. Toastmaster, members and friends of The Association that Puts the Pep in the Industry.

Your secretary is certainly a Keen un (Keenan). He sent me the usual announcement of this affair and I put my mark in the proper space on the postcard and sent it back. His next move was to say, "I am pleased to know that you accept our invitation to sit at the Guest Table. Kindly mention the subject you would like placed after your name." Later on he wrote to the effect that my choice of a subject was only a blind, and that the toastmaster would tell us what we were to say, so it seems Wise just to take De Cew and Hatch up something because I know the Judge will Sisson, having something Moore than a Steage bow.

At any rate, having put such a heavy charge in our digesters, it may be as well to relieve a little gas, although I am not sure whether the liquid should be cooking liquor or a digestive catalyzer. Now it is comparatively safe to sit down at my desk and scribble an editorial that will be read by no one within twenty miles of that sacred spot, but when it comes to standing up here and trying to make a speech, I feel as much out of my class as the Englishman in the first class compartment.

According to Mr. Carruthers, who always tells the truth, even when selling that kind of paper which is said to have the widest circulation, an American entered a first class compartment in an English train, where two Englishmen sat. One of them said in a somewhat disagreeable manner, "I say, my good fellow, you are not allowed to smoke in here."

There was no response, so after a while the objection was repeated a little more vigorously. Still the American smoked.

Finally the Englishman became quite exasperated and said if the cigar were not thrown out the window he would speak to the guard, but at the next station when the guard looked in, the American told him, the Englishman, who was complaining, was riding on a second class ticket. On being asked for it, that gentleman showed his ticket and was promptly transferred to the other coach.

The other Englishman asked the American, as the train started again, how he ascertained that their companionu was riding on a second class ticket. "Oh, that was easy," he replied, "I saw the end of it sticking out of his vest pocket and noticed it was the same color as mine."

Now these two travellers might just as well have continued the journey in peace and each enjoyed his smoke although the Englishman might have chosen a pipe or a cigarette. It seems to me that the pulp and paper makers of Canada and the United States are journeying together. Whether the journey leads to extinction of the forest and death to the industry on both sides of the line, or the perpetuation of timber supplies and continual operation of our mills, depends on the completeness of friendly co-operation between the two branches of the industry. Just as some men smoke cigars while others smoke pipes, and some land grows corn while other soil grows cabbage, so one country is naturally adapted to certain lines of manufacture while another is better fitted to make something else.

Canada and the United States were both blessed by nature with magnificent forests and the earlier industrial development of both countries involved the exploitation of this timber wealth as one of the first of the natural resources to be developed. In fact, in most of the localities it was necessary to remove a considerable part of the forest not only to construct the first log houses of the settler, but to make room for his crops. Increase in population and the consequent increase in the demand for manufactured articles, especially lumber, furniture, implements and ships, called for a continual expansion of industries dependent on the forest for raw material. The centre of the population remained nearest to the Atlantic seaboard until well along in the last century and as most of the shipping was done from Atlantic ports it was quite natural that the forest growth on the hillsides of the Appalachian Range should bear the brunt of the demand for wood. For many years the areas in forest appeared so enormous in proportion to the population that there was little thought or reason for even a crude attempt at conservation.

It was not until about three quarters of the last century had passed that the manufacture of wood pulp became an established industry and even for many years after that time there still remained apparently all the timber that would ever be required. Times have certainly changed and now the pulp and paper industry of America, disregarding for the present the 49th parallel, finds itself with the end of its wood supply almost in sight.

Coincident with the growth of population in the

---

* These remarks are taken from a talk the editor is supposed to give at the banquet of the Technical Association. They are given here in the interest of "conservation".

United States, the importance of the wood using industries has diminished quite considerably in proportion to the whole industrial development just as agriculture in the eastern States is now almost insignificant in comparison to the total yield from American soil. Along with this change of the character of American industries we find a somewhat parallel alteration in the pulp and paper industry itself. At first, paper mills were purely local concerns using rags collected in the neighborhood. With the improved methods of transportation, many of these scattered mills disappeared and the industry centered in districts which were better adapted than others for the production of paper. New Jersey and Massachusetts, for instance, soon predominated as manufacturers of paper while less and less was obtained from the Southern States. The migration was partly due to the more abundant raw material and water power in the north east.

Just as the rag industry moved northward early in the nineteenth century, so we find now a definite movement of the woodpulp and paper industry to the westward and northward. The north-western States. Canada and Alaska have now the only extensive forest reserves on this continent although careful operation will extend the life of other American forests for some years. These last forest reserves are, in fact, the principal security of the wood working, the publishing, and some other industries of this continent, and to some extent also of other countries. The maintenance of these securities in a productive condition rests with the Canadian people princpally, but there is some obligation on the part of the ultimate consumer as to the reasonableness of his demands on the trustee. Unless there is no likelihood of endangering the life of the investment, or there is great urgency, capital should not be drawn upon for current operation. The demands of the paper consumers on this continent, in the past, have induced the expenditure of our forest capital at an entirely unwarranted rate. We believe the time has now arrived when our Governments realize that a continuation of such a policy cannot be tolerated and that a forest policy is rapidly developing which will limit the amount of timber that may be annually removed from the people's property even though the consumer be obliged to pay a higher price for his product. It is simply a question of relieving the pressure in order to extend the life of the security. There is no question but that the public investment in forest lands will pay the public a handsome and continually increasing dividend. The Canadian regulations regarding the use of Crown land timber are to be looked upon therefor, not in the light of restricting the development of the industry, but rather as ensuring the perpetual operation of the industry both in Canada and the United States.

Friends of the forest in the United States have joined forces in a concerted movement which will prove an important factor in re-establishing the wood using industries of the United States on as sound a basis as they were in the early days. Canada is now industrially in a position not very dis-similar from that of the States in the early days of the woodpulp industry and the growth of the country both industrially and agriculturally will require the removal of considerable quantities of timber. The greatest care in the husbanding of present supplies is therefore imperative. Meanwhile the rapid increase in the value of timber makes it economically possible to transport it almost any distance so that we may see pulpwood transported even from Alaska or Russia to mills in the United States.

We are certain that the present agitation and concern for the future supplies of pulpwood reflects but a temporary condition and that with the establishment of scientific forest policies, many of this generation will see the beginning of the period when the forest will be re-established on non agricultural lands in a perpetually productive condition. It seems to us that there is need for the closest co-operation in the exploitation of the forest reserves of North America because they represent the future security of many industries in both countries. The situation calls for partnership rather than competition. There is no question that there is plenty of room for expansion in both countries and raw material enough to satisfy all the requirements of our populations, and then some.

AN EDUCATIONAL SURVEY.

An important piece of work undertaken by the Joint Committee on Vocational Education was a proper survey of the industry as to the basic educational requirements for the various positions in pulp and paper mills. The committee was fortunate in securing the services of Mr. J. C. Wright of the U. S. Federal Board for Vocational Education. Mr. Wright visited typical mills in Canada and the United States and tabulated the work done by each operator and his probable lines of promotion. With this is a statement of the educational subjects with which each of these should be familiar.

This material appeared serially this spring in the Paper Trade Journal and has been reprinted by that periodical as a handy pamphlet for educators and others interested in vocational education. The report is very comprehensive and will be a great help in the development of educational work. Our contemporary and the committee deserve the thanks of the industry.

Copies may be had in Canada from the Secretary of the Canadian Pulp and Paper Association and in the States from Mr. R. S. Kellogg, 18 East 41st St. or Mr. T. J. Keenan, 542 Fifth Ave., New York.

The man with few words doesn't have to take so many of them back.

The "Autovapor" Thermo-Compression Evaporator

(Description furnished by ESCHER WYSS & CO., Zurich, Switzerland, through their Montreal Office.

Coal consumers everywhere, since the War, have experienced difficulties in procuring fuel, even at high prices, and great efforts have been made to improve the existing heat processes. It is remarkable that one method of heat saving has so far found but little attention, that is the "Bruden" compression process, which allows a practically complete recovery of heat in the exhaust and its renewed utilization. This process can be used with great advantage in all cases where mechanical energy is available for driving the heat engine, and thus opens the field for the economical evaporation of all kinds of fluids, chemicals, acids, dyes, etc.

The apparatus for the Wirth system of thermo-compression is shown in Figure 1: The boiler 1 contains the fluid to be evaporated, which by means of live steam passing through the pipe 2 is first brought to boiling temperature. The vapor generated from the fluid is drawn off through pipe 5 into the compressor 6, and after being compressed, passes through pipe 7 into the heating coil 8 where it condenses. The latent heat of evaporation goes back into the fluid, where it again generates vapor, thus completing the cycle. The compressor acts thus as a booster, by means of which the temperature of the vapor coming from the fluid is brought to a higher level so that it can be used again for boiling and evaporating the fluid. In this way the heat in the vapor is entirely recovered and made use of; the process requires no supply of new heat except for small losses through radiation, but only mechanical energy to drive the compressor. In most cases the compressor is sufficient to take care of the losses besides keeping the cycle going. The heat equivalent of the energy supplied to the compressor is only a small fraction (about 9%) of the total heat utilized, which fact makes this process especially suitable for installation where mechanical energy (electric or steam) is used.

It is evident that in a process, the feature of which is the saving of every percent of coal, the heat of liquid must be utilized as much as possible. For this purpose there is shown in Fig. 1, an exhaust feed heater (10) in which the hot condensate coming from the coil 8 gives its heat to the cold fluid entering through the coil 12. The results obtainable in the "Autovapor" are shown graphically in Fig. 2. The figures given are test results with an apparatus of about 2,200 lbs. per hour capacity.

The "Bruden" compression is an old process, but only recently has been developed for economic use on a large scale, and although the principle is very simple in itself, it presents great difficulties in practice. It would be a wrong conclusion to assume that the combination of any evaporator with a compressor is suffi-

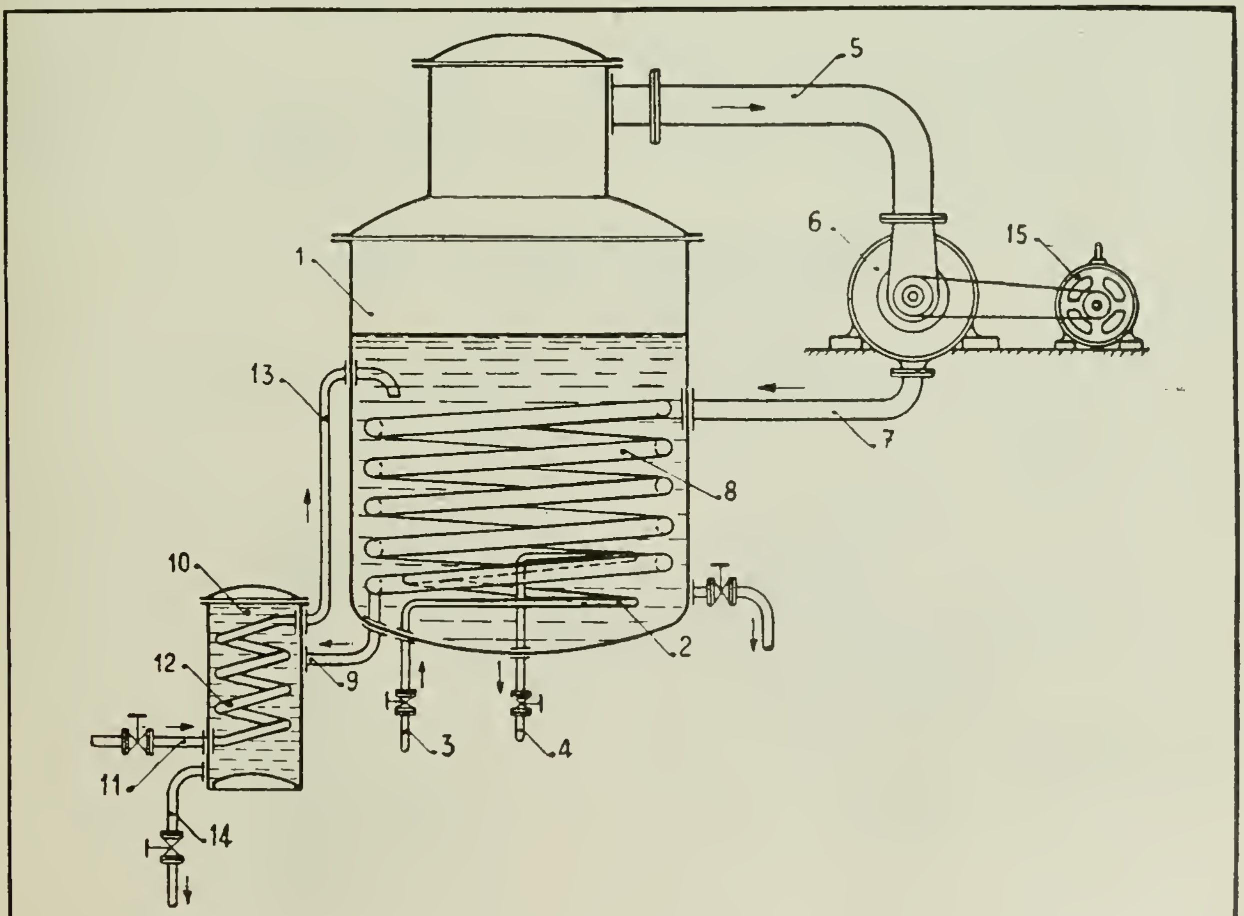

Fig. 1

cient to obtain a satisfactory operating installation; unless all details are considered and calculated correctly, the combination fails utterly.

Although evaporating plants are now in use in a number of industries, only very few of the installations show that the designers had a real understanding of the rather complicated boiling and condensing processes. The generally used multiple-effect evaporators do not reach the economy of the "Bruden" process.

It is of importance to note that the efficiency of the compressor affects only the comparatively small input of energy, and not the comparatively large heat of steam. For instance, if the compressor has an efficiency of say 70% it would be erroneous to say that 30% of the compressed vapor is lost and has to be made up in live steam heat. The compressor causes only a very small heat loss through the stuffing boxes and through radiation.

The "Bruden" principle can be used for most evaporating plants operating under the pressure or in vacuo. As the specific volume of the vapor increases with the lower pressure, the operation in vacuo necessitates larger compressors; it is more economical to operate, if possible, under atmospheric pressure, unless chemical conditions of the fluid require lower boiling temperatures. In plants using multiple apparatus operation in vacuo is adopted to utilize the drop in temperature; this is not necessary for the "Bruden" process. In all cases however, where the characteristics of the fluid change at high temperatures, a maximum temperature must not be exceeded. This process has the advantage then, that the evaporation is actually going on at the temperature desired.

The "Bruden" process has been used principally for caustic soda, dye solutions, cellulose, lye, etc., and in addition to these, the production of salt (chloride of sodium), the evaporation of milk and malt products, the distillation of water and chemicals, will offer a great field for the "Autovapor".

The operation and attendance of the plant is most simple. The "Autovapor" is fitted with automatic feeders and safety contacts so that the compressor stops in case of faulty operation or negligence. The sudden inrush of scum and fluid, which sometimes happens with surface or jet condensers, is impossible, as special devices are fitted on the boiler to prevent formation of scum. The economy of the process can be seen from the test made by Prof. Dr. Stodola of the Zurich University, the result of which was given as follows:

"In the Plant tested, we generated with 1 K. W. Hr. 36.0 to 37.7 lbs. of steam per hour, from a solution of caustic soda of 7° Beaumé and concentrated same during test to about 23° Beaumé. Calculated in heat units, this means that by means of the process used, 11.2 to 11.7 times the amount of heat has been utilized for the evaporation, which would have been available by direct conversion of the electric energy into heat. This result must be considered the more favorable as it was obtained with a plant of only about 50 K.W. capacity and unfinished insulation on boiler and compressor. The temperature of the condensate was 80°C. while the entering solution had a temperature of only 20°C. By installing a pre-heater of larger heating surface, the greatest part of the heat lost on this difference could be recovered.

The purity of the condensate is confirmed through the analysis of the Zurich Chemical Laboratory; according to the report of Jan. 15th 1918, the condensate contained 0.002 grains per liter of caustic soda (NaOH). Samples taken on the compressor and boiler show also only negligible quantities of soda.

Zurich, 18th February, 1918.

(Sgd.) PROF. DR. STODOLA.

This installation was started up with live steam, small radiation losses were also covered through additional live steam. The measured electric input cover-

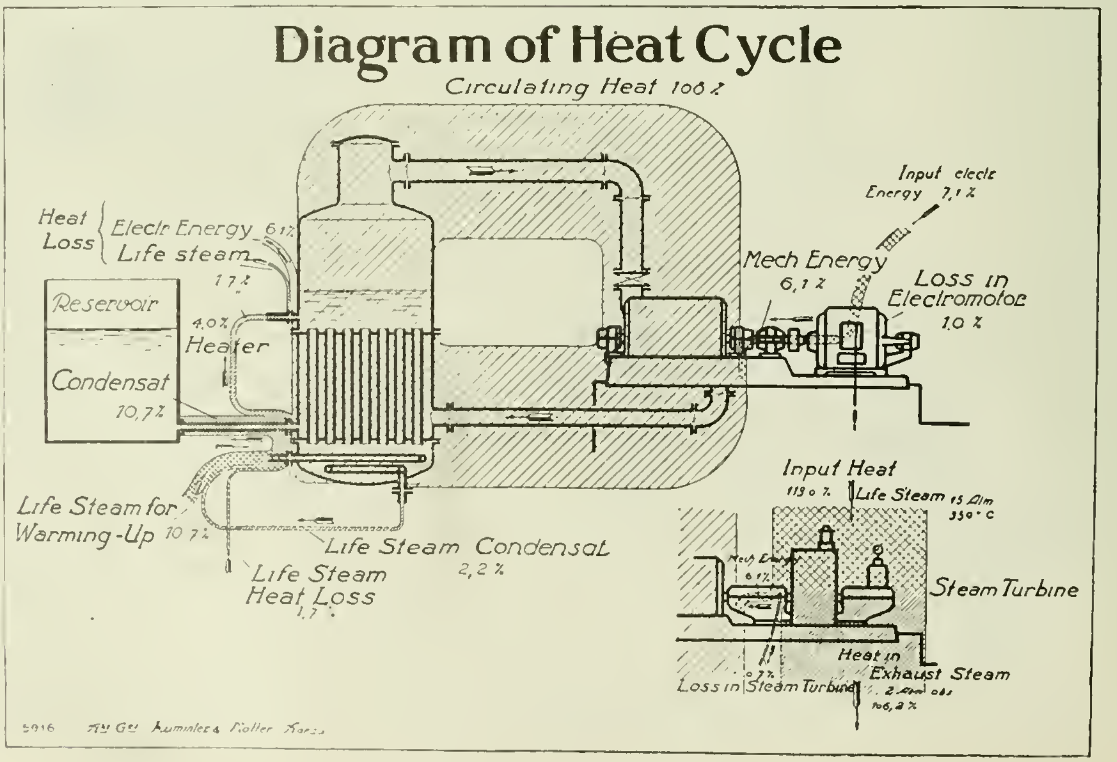

Fig. 2

ed all energy used and included the losses of the electric motors, power required by the auxiliary apparatus, etc., also the insulation, thermal and radiation losses.

The test report shows the following results obtained:

Average output of 5 hours; 2,170 lbs. of water with 52.97 K.W.Hr. or 40.92 lbs. per K.W. Hour.

Average output of best hour: 2,588.5 lbs. of water with 55.51 K.W.Hr. or 46.42 lbs. per K.W.Hour.

In general the following figures can be assumed for evaporation of various fluids:

	Lbs. per K.W Hr.
Distillation of ordinary water	61.5 — 92
Evaporation of fluids of low boiling temperature, specific weights below 1.2	44 — 77
Evaporation of common solutions of caustic soda. Specific weight not over 1.2	35 — 57
Evaporation of common solutions of caustic soda. Specific weight not over 1.5	15.5 — 44
Electrolytic solutions of caustic soda concentrated to 1.3 specific weight.	31 — 40
Electrolytic solutions of caustic soda concentrated to 1.5 specific weight.	11 — 15.5
Sulphite solutions of about 1.3 specific weight	35 — 75
Dye solutions	35 — 75
Milk, malt and sugar solutions.	34 — 66
Distillation of sea water and salt solutions	38 — 66

The lower values are for small outputs up to about 2,200 lbs. per hour, and unfavorable conditions, the higher figures for outputs of about 9,000 lbs. per hour and more favorable conditions.

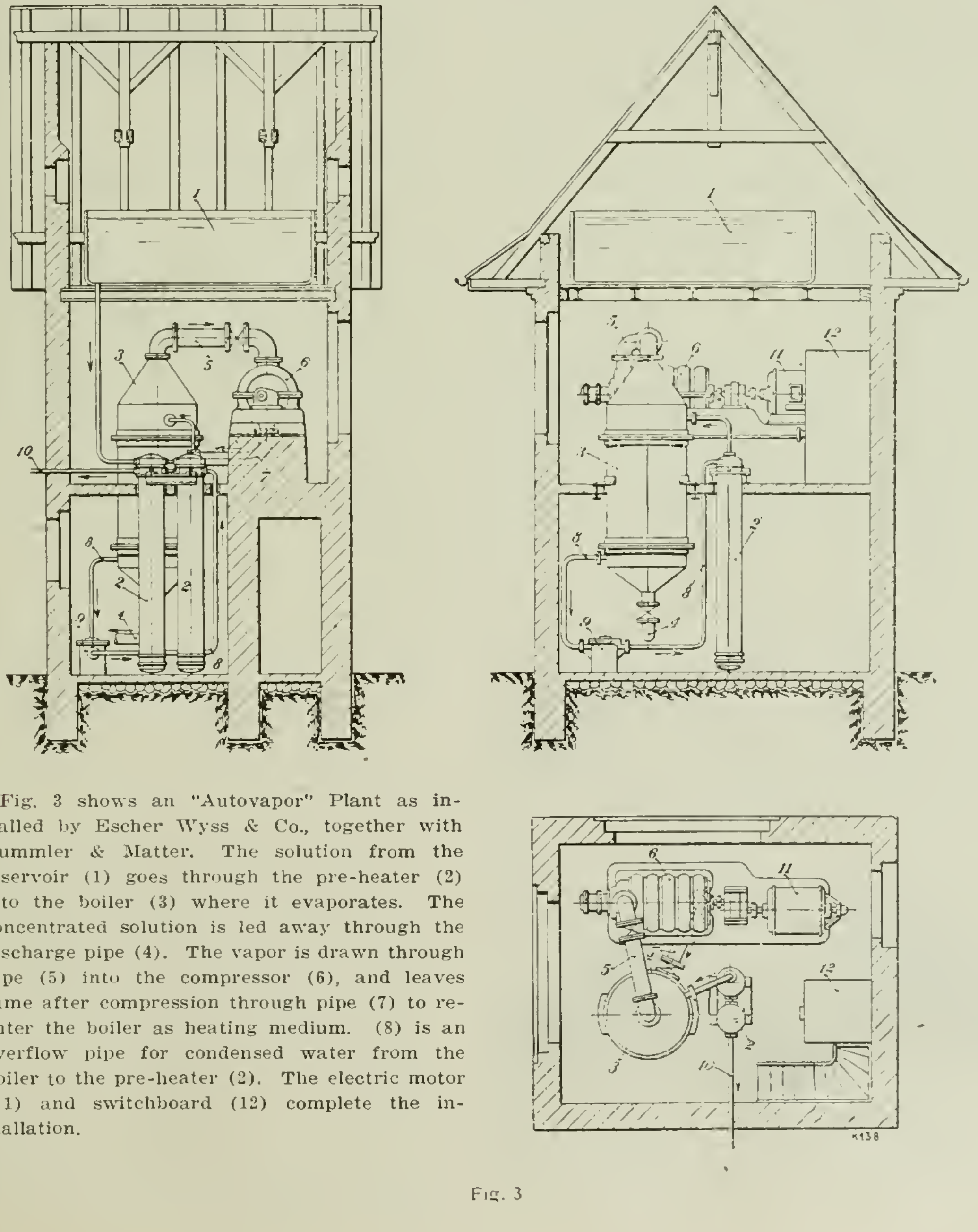

Fig. 3 shows an "Autovapor" Plant as installed by Escher Wyss & Co., together with Kummler & Matter. The solution from the reservoir (1) goes through the pre-heater (2) into the boiler (3) where it evaporates. The concentrated solution is led away through the discharge pipe (4). The vapor is drawn through pipe (5) into the compressor (6), and leaves same after compression through pipe (7) to re-enter the boiler as heating medium. (8) is an overflow pipe for condensed water from the boiler to the pre-heater (2). The electric motor (11) and switchboard (12) complete the installation.

Fig. 3

The apparatus can be built for continuous or intermittent operation. In some cases it is advantageous to effect only the pre-evaporation by means of compression, while the final concentration is done by direct boiling or exhaust steam. Prof. Stodola's report shows that the condensate coming from the "Autovapor" is pure. This is important as such plants can serve two purposes at the same time: the concentration of a solution, and the production of distilled water. The test made on the condensate showed that the water was absolutely sterile.

The economy of the "Autovapor" compared with a process using coal is shown in the following two calculations for the two principal applications:

A. ELECTRIC ENERGY vs. COAL.

Coal or Steam.

1. Simplest, most unfavorable case with simple evaporation and small boiler:

Evaporation in the apparatus:—6 lbs. per 1 lb. Coal.

2. Best results obtained with triple effect evaporator, large steam boiler and utilization of high pressure live steam prior to use in a steam engine.

Evaporation in the apparatus:—16—21 lbs. per 1 lb. Coal.

Power obtained:—0,136—0.18 KW Hr. per 1 lb. Coal.

1 lb of Coal therefore produces:—6—21 lbs evaporation, plus 0.18 K.W. Hr. Power.

ELECTRIC EVAPORATION.

1. K. W. Hour will give an evaporation of 31—92 lbs. therefore

1. K. W. Hour is equivalent to 0.66 to 11.0 lbs of Coal, or, on the average;

1. K. W. Hour is equivalent to 2.2—6.6 lbs. of Coal.

From this it can immediately be calculated at which current prices the electric evaporation is equal or superior to coal. With an average cost of 3c per K.W. Hour and average cost of coal to be of $10.00 per ton, the cost is about equal. Where cheap electric power is available or coal is higher, the electric evaporation is more favorable.

B. EVAPORATION WITH "BRUDEN" COMPRESSION.

According to "A" 1 lb. of coal produces besides 35—46 lbs. of evaporation, about 0.18 K.W.Hr. in power in a multiple evaporator. When using the same energy for driving an "Autovapor" "Bruden" Compressor and assuming the most favorable pre-evaporation, this energy can evaporate an additional 44—77 lbs. per K.W.Hr. or 17.6—31 lbs. per 1 lb. of coal.

The total evaporation can thus be increased to 24—28 lbs. per 1 lb. of coal, or by 50—65%. The ratio will be still better when using high grade boilers at high pressure.

The "Bruden" process allows therefore a considerable saving compared with the multiple apparatus and has the further advantage that the boiling temperature of the fluid can be chosen as desired. The Stodola test was made with a relatively small apparatus and the efficiency of the compressor is considerably higher for larger outputs. While the evaporation with 2,200 lbs. is 19.3 K.W.Hr. this is increased with 44,000 lbs. to 26.8 K.W.Hr. or by 39%. With fluids similar to water evaporations up to 84 lbs. per K.W.Hr. can easily be obtained.

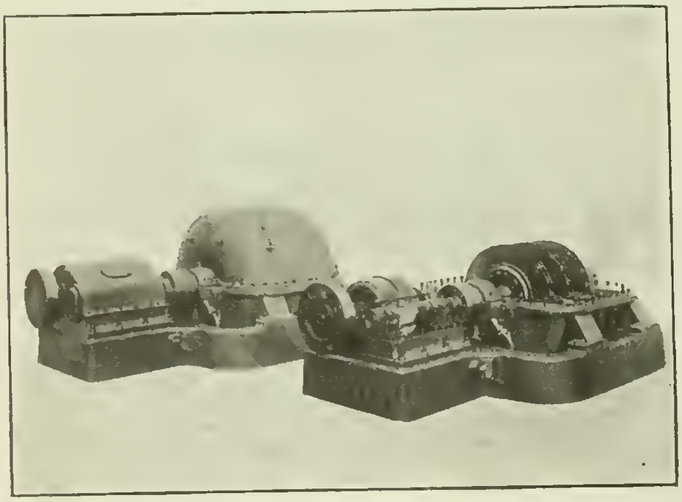

Fig. 4 shows the rotary "Zoelly" Turbocompressor as manufactured by Escher Wyss & Co., suitable for drive by electric motor or steam turbine.

DIFFERENCE BETWEEN MOLDS AND WOOD DESTROYERS.

Not all fungi which live upon wood impair its strength, but conditions which promote the growth of molds, blue-stain fungus, and other non-injurious fungi are usually favorable to the growth of the wood destroyers, and these may be active on the same wood bearing the molds. Hence, the presence of mold on timbers intended for any structural purpose should cause them to be looked on with suspicion.

In the early stages of their growth the molds and wood-destroying fungi sometimes have a very similar appearance, and there is no simple means known to the U.S. Forest Product Laboratory by which lumbermen and wood users can separate them at sight. The surface growth of molds is generally cottony or felty in appearance; the mycelium or fine mold threads are interwoven, never compacted into membranous sheets or strands. The mycelium of wood destroyers may be fluffy and glistening, but more usually are compacted into strands or fan-shaped patches.

The characteristic feature of mold growth on wood is the fact that the minute threads which enter the wood do not bore into the wood fibers or dissolve them away. They pass through the spaces between the fibers or enter them through the natural openings, called pits, which are found in the walls of certain cells. Starches, sugars, and other contents of wood cells constitute the food of the molds.

The wood destroying fungi are able to send their threads right through the wood fibers, breaking down the cell walls and utilizing portions of this decomposed material as food. This action very markedly weakens the wood, making it crumbly, stringy, or spongy,—in other words, producing rot or decay. The presence of wood-destroying fungi in an advanced stage of growth is evidenced by fruiting bodies, commonly called mushrooms, toadstools, conchs, or brackets.

The principal economic loss caused by molds is through the staining or discoloration of the wood. No greater injury may be caused by the wood destroyers in their early stages; but their work will continue and finally result in the destruction of the wood if favorable moisture and temperature conditions prevail.

Transactions of the Technical Section

INVESTIGATION INTO SPECIAL BRONZES.

By F. GIOLITTI and M. MARANTONIO.

Translation from "Gazetta Chemica Italiana", 1910, Vol. 50, Part I, pp. 51-77.

Prepared for the Committee on Mechanical Standards of the Technical Section of the Canadian Pulp and Paper Association.

I. Lead-Bronzes.

In addition to the white alloys known by the name of "anti-friction", use is often made of various types of special bronzes in the construction of machine parts subject to wear, and particularly for bearings. And of these special bronzes the best results seem to have been given heretofore by the lead bronzes containing about 10 p.c. tin and up to 20 p.c. lead. As examples of the composition of lead bronzes that have given good practical results in the construction of bearings, we quote a few of the alloys examined by Dudley (1):

	I	II	III	IV
Copper	79.70	82.20	77	77
Tin	10.00	10.00	10.50	8
Lead	9.60	7.00	12.50	15
Phosphorus .	0.80	..	..	..
Arsenic	..	0.80	..	..

Of these bronzes, used for bearings, for railway car axles, the last two (plain lead bronzes) behaved best, undergoing the least wear.

For bearings intended to support a shaft at great speed but not under a very high load, a bronze containing 84 p.c. copper, 8 p.c. tin, 8 p.c. lead seems to lend itself very well.

We could cite very numerous other examples from which—it would obviously follow that a study of the ternary system, copper-tin-lead, made with a view to explaining the structure and properties of the lead bronzes used as metals for bearings (the only practical use for which such alloys have heretofore been employed), may be confined to alloys containing less than 20 p.c. lead and less than 25 p.c. tin: the alloys containing higher percentages of these two metals do not lend themselves altogether for the manufacture of bearings.

For this reason we confined our investigations to lead bronzes containing less than 25 p.c. of tin and of lead respectively. Nor, on the other hand, would the complete and accurate investigation of the ternary system copper-tin-lead have been possible with the means at our disposal, in view of the unusual complications necessarily encountered by the complete equilibrium diagram of a ternary system like the one dealt with, in which two of the constituents—copper and tin—form one of the binary systems for which the equilibrium diagram is more complicated[2]. A complete and accurate study of the ternary system would have required the use of most delicate instruments, which were not at our disposal.

The data available heretofore on the constitution of lead bronzes were not numerous. Charpy, in his interesting work on the anti-friction alloys (Investigation into the white alloys called anti-friction: Contribution to the study of alloys pp. 203-240), even speaks of the lead bronzes, quoting several of the alloys analyzed by Dudley. He says, that the introduction of lead into bronze—with which it forms an alloy only in small proportion—only increases its plasticity. He notes the segregation and liquefaction phenomena which take place in the solidification of the lead-bronzes containing above 15 p.c. lead: and he remarks that the constitution (composition) of the bearing bronzes is the reverse of that of the white alloys, as in bronzes, instead of hard grains included in a plastic eutectic alloy, we find plastic copper crystallites (in reality these *a* crystals are formed from the first solid solution) enclosed in hard eutectic[3]. Other data on the composition of lead bronzes are not given in Charpy's work: nor are the few that have been quoted accurate (as we shall see further on) as the accurate knowledge of the binary copper tin system is of more recent data than Charpy's work.

A few more detailed data on the lead-bronzes—but referring, above all, to their mechanical properties—are given by Guillet in his volume "Industrial Study of Metallic Alloys". The author—after having quoted Charpy's observations, already cited—examines the mechanical properties, stress, the limit of elasticity, elongation, contraction of area, resistance to shock, and hardness of a number of lead bronzes obtained by starting from an ordinary bronze containing 90 p.c. copper and 10 p.c. tin (plus traces of zinc) and substituting gradually lead for the copper so as to vary the content of the latter metal from .51 p.c. to 6.18 p.c. From his experiments, he deduces: 1st. That a quantity of lead below 3 p.c. produces but a slight decrease in the tensile strength, in the elastic limit and in hardness, and does not bring about any change in the elongation, contraction area and brittleness.—2nd. That when the percentage of lead exceeds 3 p.c. the resistance to tensile stress and the limit of elasticity decrease rapidly until they reach the values of 14 and 8 kilograms per square millimeter, respectively; at the same time there is a decrease in the elongation, contraction area and hardness, and the brittleness becomes considerably pronounced. — 3rd. All the alloys containing more than 7 p.c. lead always show the same mechanical properties, which the author explains by liquation taking place in the act of solidification of the alloy, which liquation causes the ingots of the various bronzes to remain constant in the composition of the central parts from which are taken the samples for mechanical tests.

We shall revert later on these observations of Guillet's.

Guillet makes a few other remarks on lead bronzes in his investigations into special bronzes published at various times in the Revue de Métallurgie. In some investigations the author points out the possibility of doing for the special bronzes what he himself has already tried to do for special brasses, viz., to determine for each metal a numerical coefficient according to which the metal itself could be substituted for the tin of the bronze without changing the mechanical properties thereof. But even from this series of investigations, very little can be gathered on the composition of lead bronzes.

Finally E. S. Shepherd and E. Blough[4], wishing to apply Bancroft's method to the study of the composition of the binary alloys of copper and tin, selected lead as a third metal and prepared a series of lead bronzes; but these bronzes were only examined from the special viewpoint of these, so that even from the experimental material collected by them, very little can be gathered on the conditions of equilibrium of the ternary system copper-tin-lead.

Having thus briefly explained the reasons for which it seems fitting to undertake the systematic study of the ternary alloys of copper, tin and lead—at least for the field within which are included those of these ternary alloys most frequently used in industry—we shall set forth without further remarks the methods of investigation adopted by us and the results obtained.

As materials for the preparation of the alloys we took copper, lead and tin of a practically absolute purity, furnished by the firm Kahlbaum. We always took such a quantity of the three meals so as to obtain for each melt a constant weight of 300 grs.. We placed first the copper and the tin—weighed—in a tall graphite crucible and heated it in a Perrot furnace until complete fusion of both metals, keeping them always under a layer of coarsely puverized charcoal so as to protect them from any oxidizing effect of the furnace gas. To the two metals melted we added the lead, stopping then the gas flow that fed the furnace and we stirred vigorously the molten metallic mass, using the same porcelain tube (varnished and closed at the end immersed in the metallic bath) which we used afterwards as guard for the thermolectric tongs. All the openings of the furnace being closed so at to prevent cold air currents, we introduced into the above mentioned porcelain tube immersed in the molten mass with its sealed end, the junction of a platinum-platinum rhodium thermocouple, connected at the two free ends with a Siemens galvanometer on which we could read during the cooling the successive temperatures to an approximation of 2 deg. C.

When this was done, we stated in the following tables — in the usual manner — the results obtained from the study of some of the series of alloys whose composition — indicated in the tables themselves — we always checked by means of the complete analysis of two samples taken, at various points in the cooled metallic ingot. We shall refer further on the differences which we deduced in various cases from the results of the analyses made on two different samples of the same alloy.

The microscopical examinations reported later, were made with a Le Chatelier microscope: after polishing the metal surfaces first with various emery papers and finally with chromium oxide and etching them with reagents that will be indicated in each case.

Since (for reasons already mentioned) we confined our investigations to alloys containing less than 20 to 25 p.c. of tin and of lead — and this within the region in which tin always appears in the state of a copper compound (Cu_4SnCu_3Sn and their solid solutions) — it was not of great importance for us to know accurately the properties of the binary alloys of lead and tin[5], whereas it was an essential condition for the right interpretation of the equilibrium phenomena in the ternary system with which we intended to deal to know as accurately as possible the behaviour of the other two binary systems: tin-copper and lead-copper.

With regard to the former, tin-copper, one of us has recently completed and published, conjointly with Dr. Tavanti[6] a series of exact investigations on which we can base the present studies.

As to the behavior of the second binary system — copper and lead — although it is already known in its essential features, we deemed it necessary to subject it to a more accurate investigation, above all in order to determine with greater accuracy the position of the critical points in the diagram representing it[7]. For the determination pertaining to this part of our work, Dr. O. Ceccarelli was a valuable collaborator. In order to determine the position of the critical points in the equilibrium diagram of the binary system copper-lead, it will be sufficient to determine the cooling curves of six alloys of different compositions.

The results of these determinations are contained in the following table and graphically represented in the combined diagram. (Fig. 1.)

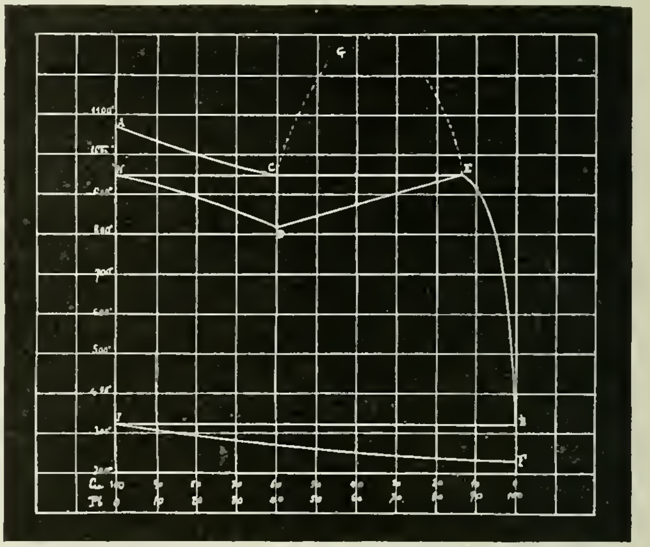

Table 1

No. of sample	Percentage Composition		I (beginning)	II (end)		III (end)	
	Cu	Pb	Temperature °C	temp. °C	duration mn.	temp. °C	duration in mn.
1	90	10	1038°	949°	2,25	323°	1,5
2	80	20	1000°	948°	5	323°	3
3	60	40	----	949°	13	323°	4
4	40	60	----	949°	7	323°	7
5	20	80	----	947°	1,8	323°	8
6	10	90	919°	---	---	323°	9

From the course of the curves in the diagram — and especially (II D E and I F) which represent the duration of the isothermal transformations — it follows clearly that the two metals do not form any definite compound by themselves and are only imperfectly miscible in the liquid state: they are not at all miscible in the solid state. The mutual solubility curve in the liquid state (a curve whose entire course as will be noted cannot be traced on the basis of the thermal determinations and which for this reason is indicated by a dotted line CGE) intersects the crystallization curve of copper in the two points C (60 p.c. Cu) and E (13 p.c. Cu) at the temperature of 950 deg. C. As will be seen, the values of the coordinates of these points, which follow from our determinations, differ from those determined by previous experimenters. Under the experimental conditions under which we worked we obtained results nearer to reality. It is seen that the eutectic point copper-lead coincides practically with the fusion point of lead.

As to the microstructure of the copper and lead alloys, it does not show anything noteworthy. In these alloys the two metals are always found side by side in a pure state, and only the dimensions of their particles and the greater or smaller homogeneity in the distribution of the two metals through the molten mass vary with the composition of the alloy and with the rate of cooling (solidifying) of the mass. The copper — as the ligter one of the two metals — tends naturally to travel towards the upper regions of the molten mass: and this phenomenon takes place to a greater extent in proportion as the solidification rate of the alloy decreases. All other conditions being the same, this is much more pronounced for alloys whose composition varies between 60 and 12 p.c. copper; that is to say for those which are already divided in the liquid state into two distinct solutions, whose composition varies with the decrease of the temperature along the two descending branches of curve CGE. In these alloys the distinct separation of the solidified mass into the superposed layers of quite different average composition is very evident. This latter fact is very obvious and has a noteworthy practical importance, as can be easily understood.

We need not say anything further now on the properties of the binary alloys of copper and lead. What has been said is sufficient for the study of the ternary alloys, with which we are concerned.

(To be Continued.)

THE MICROSCOPE IN THE MILL.

A further contribution to the discussion of the paper read at the annual meeting is contained in the following letter from a member of Forest Products Laboratories.

The microscope has proved of such great value in the hands of many of the most advanced pulp and paper technologists that every one whose business is to control processes in pulp and paper manufacture knows that this instrument is, or might be, a most important part of his equipment.

Many of those who had not hitherto employed the instrument in their laboratories attended the meeting of the Technical Section of the Canadian Pulp and Paper Association on January 19th in the hope of learning something about the microscope and its application to the problems, which it is their business to solve. The paper which was announced for that meeting was entitled "The Microscope and its relation to the Pulp and Paper Mill", and was duly read by its author. For about one and one-half hours the audience sat quietly while the paper was read and expounded, and the exponent was given all the time which he required. Advance proofs of this paper were also furnished to the audience through the generosity of the proprietors of your Magazine. The paper was subsequently published in your issue of the 31st March.

It is usually easy to criticise an author, especially when he tries to give a fairly complete account of a rather complex instrument at a single sitting, but in the present instance criticism is so easy that one's sporting instincts rebel against the task. There is, however, another aspect of the matter which cannot be overlooked. Several members of the audience were asked what they thought of the paper and they replied that it was too technical for their comprehension. It seems, therefore, that the paper may have done a positive disservice to the cause of the microscope and on such grounds it becomes one's duty to make some comments upon it.

The important question is: Does this paper convey any real information about the microscope or its application to the problems of the pulp and paper mill?

One may answer this question with a plain negative, for although there are occasionally sentences which are correct statements of fact yet placed as they are they may convey nothing to the person who is not already aware of the facts. Most of the sentences are either misleading or incorrect. Many examples might be given but a few will suffice to justify such severe criticism.

"Thus every objective falls somewhere between the 16 m.m. objective and the 1.9 m.m. oil immersion type". This is simply untrue. We use objectives which have four or five times the focal length of the 16 m.m. objective and objectives of shorter focal length than 1.9 mm. are listed in several makers' catalogues.

"The Abbe Condensers of the aplanatic type" described by the author are not Abbe condensers at all but originated long after Abbe's death.

"The correction for this (chromatic aberration) is the exclusion of the marginal rays". This sentence is incorrect. "Chromatic objectives are those in which the color distortions are corrected". There are no such things as chromatic objectives on the market today. They were objectives in which the chromatic aberrations were not corrected. The author means achromatic objectives.

When one reads the paper for some practical guidance, the choice of an illuminant or a method of mounting objects, for instance, one finds the author wandering off into vague generalities on the one hand and a recipe for cleaning glasses on the other. His main contribution to the subject of Manipulation concerns the removal of cedar oil from the objective and balsam from the stage. The author has also a paragraph on adjusting a mechanical stage which in his case was evidently a badly constructed one. His recommendations concerning rendering more visible the lines on a stage micrometer would not apply to any of our micrometers and we have three by different makers.

Let no one think, because the subject of microscopy as set forth in the paper referred to is beyond their comprehension, that therefore the use of the microscope requires some special qualifications. The instrument as applicable to the work of a pulp or paper mill is very little more complex than a telescope.

The utility of the microscope and the simplicity of its management are matters which are readily demonstrated and persons interested in such a demonstration may be accommodated at any time at the Forest Products Laboratories of Canada whose staff exists to assist the wood-using industries in all matters of technology.

Yours truly,

WILLIAM B. STOKES.

The Balbirnie Paper Mills have been purchased by the Fife Paper Mills, Ltd., of Leven, Fife.

Prices of woodpulp remain unchanged. Business is at a standstill.

The hand-made paper industry in England still continues busy and with plenty of orders on their books.

Canada Not Hostile to United States in Matter of Pulpwood

By A. R. R. JONES.

There is no hostility among Canadian pulp and paper interests to similar interests in the United States over the question of pulpwood. This fact does not always seem sufficiently appreciated in certain quarters on the other side of the line where there is some complaint just now, among pulp and paper concerns, of Canadian restrictions on the export of pulpwood, and apparently some idea that these restrictions are growing in stringency. A survey of the facts, however, affords no ground for any such dissatisfaction.

It can, of course, be readily understood that, in the circumstances in which the United States' mills find themselves today, the question of the scarcity of pulpwood should greatly exercise the minds of those who operate them. For it is generally recognized that the pulpwood resources in the United States have now reached such a state of comparative depletion that it is very difficult for these mills to obtain the supplies they require within accessible regions. A few mills, it is true, like those of the Great Northern Company, of Maine—and there are other companies in Maine of which the same thing can be said—own their own woods from which they derive the supplies they need. There are a few, too, in New Hampshire which are in a similar position. And certain classes of paper, chiefly fine papers, are made in the South from wood grown there. But whereas in the State of Maine only about ten per cent of the pulpwood which is used by the pulp and paper mills is imported, the State of New York, for example, is very largely dependent on supplies from Canada. However, comparatively favorably situated as Maine is in the matter, it is estimated that there are even in that State only about 28,000,000 cords of wood which, under normal circumstances, will last for only about twenty-five years.

Thus the question of pulpwood supply is one of very great and grave importance to the pulp and paper industry in the United States. That is understandable enough. But it affords no grounds for complaint of Canadian restrictions on the export of pulpwood or for the contention that those restrictions are increasing in stringency. As a matter of fact, during last year, which was the maximum year of production in the United States, all the wood the mills of that country wanted they got from Canada. As regards the alleged increase in restriction, this is a fallacy, so far, at any rate, as the Province of Quebec is concerned. For the same regulation is in force today in this Province which came into force in April, 1910, and which provided that all timber cut on Crown lands in the Province must be manufactured in Canada. This regulation has been in force for ten years, but it is now being criticised on the other side of the line, because, owing to the scarcity of pulpwood in their own country, certain owners in the United States of timber licenses in Canada want the manufacturing condition abrogated so that they can export pulpwood to the United States, to be manufactured there.

The United States has been prodigal of its pulpwood resources, partly, perhaps, through a misunderstanding of their extent, and partly through neglect of a proper system of reforestation. It must be borne in mind, however, that a very considerable portion of the standing timber in Quebec—and the same thing is true of other Provinces—is not on Crown lands. United States pulp and paper concerns can buy wood from Canadian farmers, for example, on the same terms as similar concerns in this country. Indeed, Canadian mills throughout and since the war have themselves had to purchase large quantities from farmers, particularly when labor conditions have been unfavorable. Thus mills in the United States are able to get a large part of their requirements in unmanufactured form. As regards wood on Crown lands, they are subject to the same regulation as Canadian mills, that is to say they can cut the wood and convert it into pulp and paper, so long as the process of manufacture takes place in Canada. The objects of the export regulations in Quebec and other Provinces are, first, to prevent the wood supply from being decimated, and, secondly, to conserve our own industries in each Province. Certain American pulp and paper concerns, as is well known, have put up mills in Canada—and profoundly welcome they have been.

No political question is involved in the matter, and all rash talk which serves to create or to foster anything like mutual antagonism relative to it, is to be deprecated. The pulp and paper mills on this continent, on whichever side of the line, are all associated together in the furtherance and development of a great industry.

At the same time, it is essential to Canada's future in the pulp and paper industry both that she should prevent her forests from being "shot to pieces,"so to speak, and also that she should pay closer attention to the important matter of reforestation. It is easily demonstrable that an adequate supply of pulpwood is the supreme and governing factor in the pulp and paper industry on this continent. Each year the cut of pulpwood will go farther back from the sides of the lakes and streams. Each year it will go farther north. Each year it will recede into less and less accessible regions. It is a difficult matter to get anything like an approximate estimate of this country's pulpwood resources. But surveys have been made which show that there are about 670,000,000 cords of spruce and balsam fir in Canada. The supply in this country, in the opinion of Mr. R. S. Kellogg, secretary of the News Print Service Bureau in the United States, will last, taking present consumption into consideration, for about fifty-six years.

According to Mr. Kellog, the best the pulp and paper industry in the United States can hope for "is a pretty severe stringency during the period between the complete exhaustion of the present supply of pulpwood and the coming on of the new supply brought about by general forest protection and reforestation through the cooperation of national, State and private agencies. On account of the tremendous investments required in the development of pulp and paper plants, manufacturers must, of necessity, figure on an operation of forty years or more, in order to bring their overhead charges down to a reasonable factor in production cost. This is the reason why the industry must take a long look ahead in providing for its raw material."

These words, though used with respect to the industry in the United States, convey a grave warning to Canada, which she may well lay to heart—while yet there is time.

British Trade News

(From Our London Correspondent.)

London, March 29, 1921.

The Utrecht Fair, which enables manufacturers to reach the Dutch market and the Dutch Colonies, with their population of 40,000,000 people, will be held this year from the 6th to the 16th September. The Fair is one of the best established buying centres in Europe and is an extremely important one. Woodpulp manufacturers, or makers of machinery for pulp and paper manufacture, will find the Fair useful for exhibiting Canada's products.

Newspapers Reduce Price.

Owing to the drop in the price of newsprint recently some of the newspapers in England are going back to their original price of 2 cents a copy. They are mostly the old established newspapers. There are two bright elements in newspaper production today, one being a slight reduction in newsprint costs and the other a reduction in wages where bonuses were paid on the rise and fall in the cost of living. The tendency, however, is for newspapers to get into the hands of combines owing to the high cost of production and the labor element is condemning this policy.

A Fortune From Wall-paper.

The late Mr. John Potter, of London, one of the founders of Wall Paper Manufacturers, Ltd., who have an extensive mill at Darwen, in Lancashire, and who died sometime ago in his 66th year left unsettled property valued at £254,136 gross, of which the net personality has been sworn at £200,119. In his will he did not overlook his employees as he has left 5,000 £1 shares in the Darwen mill, for their benefit and their families, according to a scheme drawn up by his Trustee. Mr. Potter was greatly interested in the welfare of his workers and the results of his labors on their behalf stand at Darwen today as a monument to his memory.

Bentley & Jackson's Loss.

Death has removed a valued servant from the employment of Bentley & Jackson, the well-known papermakers' engineers, in the person of Walter Partington. For thirty years he was connected with the engineering firm, two decades of which he acted as secretary. Mr. Partington was only 52 years of age and he came of an old family of papermakers. He leaves one brother in Canada, in the papermaking industry, and one in the States to mourn his loss. Firms, of course, can ill afford to lose old servants like this as they always prove a valuable asset when conferences on policy and unusual departures in business routine are under consideration.

Electricity in Mills.

The introduction of electricity into British paper mills is not so progressive as one would imagine. Only 21 concerns out of 500 papermaking concerns in the United Kingdom utilize it. They are consequently behind Canada as regards electrification. The British papermaker, however, is a very staid old gentleman, as is instanced by the delay in establishing a Technical Section for the industry, and he is very careful about adopting new methods in case the report trade might get upset in his mill. And he cannot be blamed. He is in a competitive market with foreigners underselling him and a government disinterested in his welfare and industry. It consequently behooves him to be cautious in regard to alterations in his mill.

Another Newspaper Ceases.

The northern edition of the London "Daily News," which for the past 12 years has been printed in Manchester, has been dropped owing to the cost of paper and the high cost of production, and will in future be published from the office in London. This northern edition was really a duplicate of the London paper and was admirably produced. Indeed, I have happy recollections of being a paragraphist for it when it first started. Apart from the loss this paper means to paper manufacturers in the way of newsprint, the change means a big staff joining the ranks of the unemployed.

"In The Game."

The eyes of printers and papermakers in England have been opened considerably by the progressive policy of The Industrial and Educational Publishing Company in their endeavor to secure a supply of paper by establishing their own mill. No firms in the United Kingdom producing trade journals have ever attempted such a scheme and in the daily Press only the Northcliffe papers and the "Daily Telegraph," owned by Lord Burnham, get their paper direct from their own mills. The action of The Industrial and Educational Publishing Company is a great step in the history of printing and one that all Canadians may take their hats off to. Canada is certainly giving a great lead to some of England's great and wealthy trade journals, and I doubt if any Germans or French firms have ever attempted such a progressive policy. The name of The Industrial and Educational Publishing Company will be honoured in the printing world and there will be no doubt as regards achievement in paper manufacture.

The Depression.

As I write the Easter holidays are on and they are welcomed as a respite in the depressed state of business in the paper industry. Travellers return home with the same old story, "Nothing Doing." It is a most anxious time for them and the mill also. One said the other day that throughout all his journeys he only received one order and that was from the mill to return home. It is typical of the times. The holidays are consequently welcomed and some mills have taken advantage of them by introducing 3 days work a week, or closing down for a week. This is certainly not a healthy sign, but the movement is in common with the textile and other industries.

Chemicals.

From a paper manufacturer's point of view the chemical market has turned in his favor, but little business is passing. Caustic soda can be had from £26 to £27 for 76 p.c., and from £24 to £25 ss. per ton for 70 p.c., and Bleaching Powder can be shipped abroad in casks at £23 to £24 per ton. Sulphite of Alumina is £13 5s. to £16 a ton, and the export trade in Alumina stands at £19 to £20 a ton. Sulphur is quoted as follows: Home Flowers, £25 a ton; Roll £17; and Rock, £11 a ton. Sicilian Flowers and Roll, £14 10s.: Rock, £9 a ton. Salt Cake is £10 10s. exported.

China Clay.

The Cornish China clay industry is feeling the depression in the paper and other trades very severely just now and some of the Canadian producers will be interested to hear that there is no demand in the United Kingdom at present for the mineral product. In fact one big seller said the other day that if he offered to sell at 2 dollars a ton he would not get an order for his China clay. It stands to reason, therefore, that the depression in trade is the cause of the China clay slump and not prices.

PULP EXPORTS REFLECT BUSINESS DULLNESS.

Canadian exports of pulp and paper for the month of February were valued at $8,668,815, compared with $9,391,927 in February 1920, a loss of $723,112, and were $994,236 below those of the preceding month. The month's returns mark the first actual net decline in the total value of these exports in a period of almost four years during which the saving has been consistently upward. The decline affected all grades of paper and pulp except book paper, which shows an increase of 3,742 cwts for the month. The decline in value is less marked than the decline in volume. newsprint showing a falling off of 100,497 tons, chemical pulp 18,987 tons and mechanical pulp 9,018 tons as compared with February last year. The figures show:

February	1920	1921	Gain or loss
Paper	$6,304,388	$7,039,839	$ 735,451 x
Chem. pulp . .	2,615,156	1,384,927	1,230,229
Mech. pulp . . .	472,383	244,049	228,334
x Gain	$9,391,927	$8,668,815	$ 723,112

The paper exports for the month included 5,768 cwts. of book paper, valued at $89,220; 1,056,706 cwts of

EXPORTS OF PAPER, WOOD PULP AND PULP WOOD.

Exports of Canadian Produce.—Months of February 1920 and 1921; and eleven months ending February 1919, 1920 and 1921.

		Months of February.		Eleven months ended February.		
Paper:						
Printing paper		1920	1921	1919	1920	1921
Book paper	Cwt.	2,026	5,768	. . . .	43,210	60,574
	$	17,540	89,220	. . . .	394,393	723,576
Newsprint paper	Cwt.	1,266,653	1,056,706	. . . .	12,846,364	13,597,118
	$	5,290,398	6,256,050	. . . .	47,017,487	69,759,807
Printing paper	Cwt.	. . . .	. . . .	11,894,902	. . . .	. . . .
	$	. . . .	. . . .	36,127,821	. . . .	. . . .
Other paper	$	996,450	694,569	6,002,966	8,610,332	11,734,311
Total paper	$	6,304,388	7,039,839	42,130,787	56,022,212	82,217,694
Wood Pulp:						
Sulphate (Kraft)	Cwt.	181,672	103,520	. . . .	2,260,002	2,214,829
	$	600,722	471,722	. . . .	7,406,625	11,563,979
Sulphite, bleached	Cwt.	102,682	65,623	. . . .	1,067,776	1,784,589
	$	553,281	431,750	. . . .	5,449,753	14,189,805
Sulphite, unbleached	Cwt.	379,708	115,162	. . . .	4,343,940	4,632,127
	$	1,461,153	481,455	. . . .	16,268,404	27,068,664
Chemically prepared	Cwt.	. . . .	. . . .	7,793,694	. . . .	. . . .
	$	. . . .	. . . .	28,184,972	. . . .	. . . .
Mechanically ground	Cwt.	266,826	86,464	3,339,275	6,498,548	5,142,174
	$	472,383	244,049	4,253,361	7,821,111	16,207,726
Total Wood Pulp	Cwt.	930,888	370,769	11,132,969	14,170,266	13,773,719
	$	3,087,539	1,628,976	32,438,333	36,945,893	69,030,174
Pulp wood	Cord.	52,351	195,037	1,449,117	790,828	1,438,149
	$	539,429	2,774,159	13,978,457	7,956,819	19,171,099
Country of Destination.						
Paper and manufactures of:						
To United Kingdom	$	800,519	138,687	864,949	4,552,885	3,760,569
United States	$	4,799,648	5,818,447	34,285,522	44,467,576	64,598,960
Other Countries	$	704,221	1,082,705	6,980,316	7,001,751	13,858,165
Wood Pulp:						
To United Kingdom	$	231,191	106,816	145,927	4,530,668	7,785,090
United States	$	2,438,033	1,263,338	29,188,882	28,102,380	56,064,554
Other Countries	$	418,315	258,822	3,103,524	4,312,845	5,180,530
Pulp Wood:						
To United Kingdom	$	. . . .	. . . .	. . . .	. . . .	. . . .
United States	$	539,429	2,774,159	13,978,457	7,956,819	19,171,099
Other Countries	$	. . . .	. . . .	. . . .	. . . .	. . . .
Total paper, wood pulp and pulp wood:						
To United Kingdom	$	1,031,710	245,503	1,010,876	9,083,553	11,545,659
United States	$	7,777,110	9,855,944	77,452,861	80,526,775	139,834,613
Other Countries	$	1,122,536	1,341,527	10,083,840	11,314,596	19,038,695
Totals	$	9,931,356	11,442,974	88,547,577	100,924,924	170,418,967

newsprint, valued at $6,255,050, and other paper valued at $694,569.

Pulp exports included 103,520 cwts. of sulphate (kraft valued at $471,722; 65,623 cwts. of bleached sulphite, valued at $431,750; 115,162 cwts. of unbleached sulphite, valued at $481,455, and 86,464 cwts of groundwood pulp, valued at $244,049.

Countries of destination were: Paper — United Kingdom, $138,687; United States, $5,818,447; other countries, $1,082,705; Pulp, United Kingdom, $106,816; United States, $1,263,338; other countries, $258,822.

Unmanufactured pulpwood to the amount of 195,037 cords, valued at $2,774,159 was exported to the United States during the month, compared with 52,351 cords, valued at $539,429 in February, 1920.

For the first eleven months of the current year, April to February inclusive, pulp and paper exports reached a total value of $151,247,868, compared with $92,968,105 for the corresponding period of 1920 and with $74,569,120 in 1919, a gain of $58,279,763 over 1920 and of $76,678,748, over 1919. They were made up as follows:

Eleven months	1919	1920	1921
Paper	$42,130,787	$56,022,212	$82,217,694
Chem. Pulp . .	28,184,972	29,124,782	52,822,448
Mech. Pulp . .	4,253,361	7,821,111	16,207,726
	$74,569,120	$92,968,105	$151,347,868

Exports of unmanufactured pulpwood for the eleven months' period amounted to 1,438,149 cords, valued at $19,171,099, compared with 790,628 cords, valued at $7,956,819 for the corresponding period in 1920, and with 1,449,117 cords, valued at $13,978,457, in 1919, all of which went to the United States.

WHERE CANADIAN PULPWOOD CROSSES THE BORDER.

As my last letter was a short note relative to statistics on pulpwood and paper, I will try to give a summary of the points where Canadian wood enters the United States, writes G. B. Oberton, of Canton, N. Y. I will start at the state of Wisconsin and refer only the Fox River group. This includes all mills on Fox River from Lake Winnebago to where the river empties into Green Bay. A large percentage of the wood used here comes from Canada and enters at the following points:—

Across Lake Superior by vessels and in rafts to Ashland, thence by rail to the mills.

By vessel and in rafts to Green Bay, thence by rail and Fox River canal to the mills.

Railroad transportation by way of Sault Ste. Marie.

Now this does not imply that these mills are operated entirely on Canadian wood. It simply means a large percentage comes from Canada through the sources named. The local supply comes from the northern peninsula of Michigan and the northern part of Wisconsin. Canadian wood enters Detroit partly by boat and on cars in transit. Shipments of wood are also made to Erie, Pa. The water shipments come via St. Lawrence River, Lake Ontario, Welland Canal and Lake Erie. Wood delivered at the above-named point is used in the mills of Pennsylvania. Shipments are also made to these mills in cars via Buffalo and Niagara Falls, coming chiefly from Northern Ontario.

Coming east, the next place of importance is Oswego. This port is a water terminal for wood from the lower St. Lawrence River. The wood is delivered to mills on the Oswego River, a few miles away. Cape Vincent is also another water terminal for wood coming up the St. Lawrence. This place is one of the sources of supply for the mills on Black River. Ogdensburg is another transfer point for Canadian wood. As in the case of Oswego, wood is shipped by barge from the lower St. Lawrence and transferred to cars.

The large mill at Pyrites, owned by the "New York World", gets its supply of wood from the Ogdensburg terminal. Waddington, a few miles below Ogdensburg, is another water terminal for wood arriving from the lower St. Lawrence. Canadian wood is transferred from boat to cars and then delivered to the Remington-Martin Paper Company at Norfolk, N. Y.

Disregarding a mill here and there, I will next note the mills within a radius of twenty miles of Glens Falls, N. Y., which I will call the Hudson River group. Wood from Canada finds its way into this district by the following routes:—

St. Lawrence River, thence Richelieu River, Lake Champlain and Champlain Canal.

D. & H. RR. via Rouse's Point.

Central Vermont and Barton & Maine railroads with their connecting roads in the Province of Quebec. Wood from Canada enters New Hampshire and Maine from the west and north via Grand Trunk and Canadian Pacific railroads. Portland, Maine, is also a water terminal for wood from New Brunswick seaports. The wood is loaded on to cars and shipped to various mills in Maine, notably those of the International Paper Co.

Now some one may ask what percentage of the wood used in American mills is Canadian? The returns for the last year are not completed. A few years ago, however, Canada furnished 29 per cent. of the total amount of spruce used in American mills and poplar 16 p.c., and since then there has been a great increase. The figures quoted apply to the entire list of states, and do not afford an idea of the percentage of Canadian wood consumed in the regions that I have mentioned. For instance:—There are states that do not use Canadian wood on account of distance, notably, West Virginia, North Carolina and several others. Pennsylvania uses a large amount of hemlock and hardwoods, and only a comparatively small amount of spruce from Canada. This brings the average percentage of Canadian wood (as it applies to the entire list of states) down to the figures quoted from the "Department of Commerce and Labor". For instance, we will take the three groups of mills already noted, namely, the Fox River group in Wisconsin, and the Black River and Hudson River groups in the state of New York. It is quite safe to say that at least 60 per cent of the wood is from Canada. It will average higher than that for the Hudson River group and perhaps 75 per cent for the Black River plants between Carthage and Dexter, inclusive. The average does not include the St. Regis, Gould and Dexter sulphite companies, who, by the way are large woods operators in the Adirondack region nearby. I have only noted groups of mills using pulpwood. There are, however, a large number of American mills that do not use wood. There are five mills in the United States employing over 1,000 hands, of which two are in Maine, one in Pennsylvania, one in Maryland and one in Ohio. The mill in the last-named state is located between Dayton and Cincinnati and does not use pulpwood. — Canada Lumberman.

PULP AND PAPER NEWS

Elsewhere we give details of the appointment of four new directors to the board of the Riordon Company. As the company is one of the largest world concerns of its kind, it is natural that the more diversified board representation which has now been effected should arouse very widespread interest. No doubt the situation will speedily clarify in a manner which will make plain the meaning of these important changes. At the moment of writing, opinion seems to be that the changes in question point to a rounding-out, so to speak, of the Company's activities. It appears to be generally agreed that the additional board representation will bring even enhanced strength to a concern universally recognized as among the strongest of the strong. In various ways, the new directors are all men well qualified to bring high business acumen, as well as high business prestige, to the duties of their new offices. Mr. Frank P. Jones, vice-president and general manager of Canada Cement, Ltd., is an all-round man of business affairs with financial talent which is recognized on all sides. Mr. F. N. Southam, with his connection with a well-known publishing house, as well as with a large number of newspapers, brings to his new office experience of a different kind, as does Mr. F. E. Bronson, who is connected with extensive lumber and logging industries.

With regard to Mr. George M. McKee, the managing director of the Donnaconna Paper Mills, Ltd., and vice-president of the Canadian Pulp and Paper Association: who is the other new director of the Riordon Company, he is admittedly one of the strongest paper men in Canada. He has a rare knowledge of every department of the business. To start with he has the advantage of being a trained technical man. Then he is a man of sound business training and excellent judgment as well as of notable sagacity. In the words of one who knows him well, he is never apt to be misled by temporary conditions, but possesses, in marked degree, the capacity to see a situation steadily and to see it whole.

Montreal being such a centre of the pulp and paper industry, it is to be regretted that comparatively so few representatives of that industry from the city and district have found it compatible with their other engagements to attend the Convention of the T. A. P. P. I. which is being held in New York this week. Among those attending are Mr. P. B. Wilson, vice-president of the Spanish River Pulp and Paper Mills, Ltd., and president of the Canadian Pulp and Paper Association, Messrs. Howard Smith, president, and George A. Davidson, of the Howard Smith Paper Mills, Ltd.; Messrs. T. J. Stevenson, G. E. Challes and F. G. Robinson, of the Riordon Company, Ltd; J. Larkin, of the Federal Paper Company; and Mr. A. L. Dawe, secretary of the Canadian Pulp and Paper Association. Some Montreal paper merchants, including Messrs. Ernest Dawson and C. Macfarlane, are also attending the Convention.

Montreal jobbers report that while city business has been none too brisk, country business has picked up considerably in the past week, especially in respect of the demand for wrapping paper, etc.

It was announced last Monday by C. Howard Smith, president of the Howard Smith Paper Mills, Limited, that T. Palmer Howard, one of the directors of the paper enterprise, had been appointed comptroller of the company. The office, Mr. Smith stated, is a new one, its creation having been made necessary by reason of the great expansion in the scope and business of the company during the past few years. Mr. Howard's advent to the operating executive, would prove of substantial advantage in the heavier responsibilities involved through the extensions already embarked upon by the company. Mr. Howard is one of the best known business men in Montreal, being presently general manager of the Phoenix Bridge Company. He is also a past president of the Montreal branch of the Canadian Manufacturers' Association.

The salesmen of the various paper merchants in Montreal and district recently met the Canadian Pulp and Paper Association in conference when the arrangements being made to promote business through publicity were outlined to them. This was the first time that these salesmen had been brought together, and out of the meeting has come an interesting development. The suggestion was made that they should organize a paper salesmen's club and this suggestion has now borne fruit. A committee on organization, consisting of Messrs. E. T. Reynolds, H. Larkin, Henry E. Bell, and S. Rodier, has been appointed and this committee has drawn up by-laws which will be considered at a meeting to be held on Wednesday of next week, when the officers of the new club, which it is proposed to name The Paper Club, will be appointed. The purposes of the club are to bring about wider acquaintance among those engaged in the selling of paper and paper products; to assist in raising the efficiency of selling methods; to promote development of the highest sales ethics among its members; and to increase the use and sales of paper and paper products.

The executive of the Canadian Box Manufacturers' Association, with headquarters in Toronto, were in Montreal last Monday.

A circular letter, in the form of a questionnaire, bearing on the present conditions and the future outlook of the printing business, in its relation to the business of paper manufacture, was recently sent out by Mr. A. L. Dawe, secretary of the Canadian Pulp and Paper Association, to every printer in Canada. Replies to this circular have been received from the great majority of the printers, and these replies show that, in a general way, the printing fraternity's point of view is highly optimistic. In Western Canada, the printers report generally, that business is good and the outlook for the future still better. In the country as a whole, even though business is admittedly not up to normal, the general feeling seems to be that the tide has now definitely turned, and that from now on business will increase. Of course, there is some difference of opinion on the matter among the printers, but the majority of them take the view that reduction has now gone sufficiently far to ensure a resumption of normal demands for printing within a very short time.

Negotiations are in progress for the sale of the North American Pulp and Paper Companies Trust's assets to a London syndicate.

Application has been made to the Montreal Stock Exchange by Price Brothers and Company, Ltd., for the listing of the stock of the new company which recently took over the old company as a going concern on a basis by which shareholders received five shares in the new company for each share of old company stock held. The application is for the listing of $42,683,200 of an authorized issue of $60,000,000 of common stock, consisting of 426,832 shares of a par value of $100 per share, of which 357,972 shares have been issued and are outstanding in the hands of the public. The balance of 68,860 shares are held to be exchanged for shares of the old company.

This week on the Montreal Stock Exchange has been remarkable for the activity and strength displayed by Laurentide. On Monday the issue moved up 4¼ points to 92½ and held the gain with 92⅜ bid for more stock. Most of the other paper issues, including Abitibi, Brompton and Spanish River, followed Laurentide's lead.

Fred L. Ratcliffe, head of the Ratcliffe Paper Company, Limited, York Street, Toronto, was elected vice-president of the Toronto Rotary Club at the annual meeting of that organization in Toronto last week.

Acting for the Attorney-General for Ontario, G. E. MacNab secured from the Master in Chambers, in Toronto, an order adding the Minister of Mines and Forests as party plaintiff in the action against the Shevlin-Clarke Lumber Company, arising out of the timber probe. According to the affidavit by R. T. Harding the addition is necessary "to enable the Crown to have all the rights out of all the transactions of the defendants or any of them with the defendant, and without the said minister the plaintiffs will not be able to have the liability of the defendants adjudicated upon."

That the Ontario Government intends to take legal action to recover from Hon. G. Howard Ferguson, ex-Minister of Lands, Forests and Mines, the files of letters, claimed by him to be private, which were removed from the department by his secretary, C. C. Hele, after the defeat of the Conservative Government, was plainly evident in a heated debate in the Ontario Legislature last week, when the bill to amend the Public Enquiries Act was up for discussion. The bill seeks to release the timber probe from the injunction proceedings brought by the Spanish River Pulp and Paper Mills Company, Limited. The Attorney-General told the House that he linked up with the subpoena proceedings for the production of the correspondence before the commission the injunction proceedings of the Spanish River Company to halt the whole proceedings of the Royal Commission.

The Frontenac Paper Box Company, Limited, has been granted incorporation by the Ontario Government with power to manufacture and deal in paper boxes and allied lines and to engage in a general printing and lithographing business. The capital is $40,000 and the head office is Kingston, the provisional directors being I. M. Bearance, M. J. McMahon and E. Mulholland.

A favorable progress report was received in Toronto last week respecting the operations of Clarke Bros. Paper Mills, Limited, in New Brunswick. Box-making was started a few days ago at Glen Falls, near St. John, with a plant of two buildings to make fibre board and corrugated and fibre board boxes. The fires have also been started at the company's pulp plant at Bear River, N.S. and it is expected that the cooking of pulp will commence this month. The original capacity of this mill was thirty tons per day, but this has been almost doubled with little extra outlay.

The office of S. J. Frame, trustee and assignee and secretary of the Canadian Box Board Manufacturers' Association, has been moved from 24 King Street W., Toronto, to 95 King Street W., the telephone number being Adelaide II.

NEW PULP PLANT FOR ALGOMA DISTRICT.

A pulp and paper mill in the district of Algoma, north of the Transcontinental railroad, near the Thunder Bay border line on the James' Bay height of land, is almost certain to be established before the duration of very many months. The Ontario Government is now asking tenders, which will be received up to June 15, for the right to cut pulpwood and pine timber in a large area situated near the Nagagami River, which would likely be the place for the erection of a mill. One of the conditions of tendering is that the successful tenderer must build a pulp and paper mill near or on the territory referred to, and no tenders are being accepted unless accompanied by a marked cheque for $50,000, which will remain on deposit until such a mill is built.

CONFERENCES FOR CLOSER CO-OPERATION.

The Laurentide Company, Limited, Grand'Mere, P. Q., have inaugurated a series of conferences between the inspectors, cullers and scalers of the Logging Department, with a view to secure closer co-operation between the woodsmen and those in the mill; to give them a better conception of the importance of various problems, and also to afford opportunities for the interchange of ideas and suggestions as how best to handle these problems. A great deal of the work is carried on at a considerable distance from the mills, and there is comparatively little contact between the men in the woods and those at the mill. This does not make for an understanding on the part of the woodsmen as to the relation of their work to that at the mill. The Laurentide Company have, therefore, arranged for visits to the mills, so that the men can see for themselves the sort of wood that can best be used and greater judgment exercised both in the sawing and culling.

BRANCH OPENED IN MONTREAL.

Owing to the rapid growth of their business in Eastern Canada, the Diamond State Fibre Company of Canada, Limited, with Head Offices and Works in Toronto, have found it necessary to open a Branch Office at 84 St. François-Xavier St., Montreal. Mr. J. Alexander Regan will be in charge of the Montreal Office. The opening of this Branch will facilitate the effective handling of their increased Eastern business.

A newspaper report recently stated that the Brown Company intend building a paper mill at Three Rivers, P.Q. On taking up the matter with the Company, the Pulp and Paper Magazine is informed that they have no such plans.

Technical Section

REVIEW OF RECENT LITERATURE.

A-3; R-1. A new pulp. World's Paper Trade Review, lxxiv, 26 (Dec. 24, 1920). A mill on the Parana river, Brazil, was to have begun operations in September. It is using a raw product, a species of bog grass called "paja brave". This grass grows during the whole year and is very abundant. The mill is equipped to make only pulp in sheets and strawboard for paper boxes and has a capacity of three tons of strawboard a day. It is planned to increase the equipment later in order to make finer pulp and to obtain greater production.—A.C.

A-11. Selection and testing of paper fillers. E. G. MILHAM. **Paper Industry,** ii, 9 (Dec. 1920). The mineral fillers commonly used are china clay, talc, sulphate of lime, ground feldspar and lime carbonate. A good filler should have the following properties: Moisture should be low, color should be a clear bright white, should be free from dirt, grit and hard lumps, should mix readily with water to form a smooth cream, should not foam with an excess of alum solution, should be comparatively insoluble in water.—C.J.W.

A-11. Examination of china clay.—China Clay Review, ii, (Dec. 1920). A typical chemical analysis of china clay given by Heath.—A.C.

A-14. Paper testing. World's Paper Trade Review, lxxiv, 26 (Dec. 24, 1920). A detailed account of the testing of paper, together with an account of the variations and their sources, which arise in the estimation of composition and properties of paper.—A.C.

A-14:K-O. Fiber length and position. W. CODLITZ **Paper Trade J.,** lxxii, 2 (Jan. 6, 1921).—A strip of paper 10 by 15 mm. is gripped by a pair of special pincers so that a certain length protrudes, moistened to remove sizing, and then brushed from both sides until only fibers remain. The fibers shorter than 5 mm. have been brushed away. The weight of the fibers removed is determined after drying. The operation is repeated until all the various lengths have been determined. The largest amount of fibers and accordingly the longest fibers are not found in the straight longitudinal cuts but when paper was cut at an angle of 30 degrees. Thus, paper ought to be cut at this angle to secure the greatest tenacity.—C.J.W.

B-7. Costs in woods operations. D. A. CROCKER. **U. S. Paper Maker,** lxii, 24 (Nov. 15, 1920), **Paper Industry,** ii, 9 (Dec. 1920). This is a discussion of the manager's point of view as to the current cost of his operations, with particular reference to the methods used by the Eastern Manufacturing Company.—C.J.W.

B-9. Finland's timber and paper industries. — LESLIE A. DAVIS.—**Paper Trade J.,** lxxi, 8 (Feb. 17 1921).—Statistical review.—C.J.W.

B-9. The pulpwood situation. HUGH P. BAKER. **U. S. Paper Maker,** lxii, 24 (Nov. 15, 1920). There are trying times ahead of the paper industry because of the thoughtless way in which we have forged ahead, assuming in our good-natured American way that somehow wood would be forthcoming. Pulpwood and pulp are not going to be materially cheaper over a period of decade.—C.J.W.

B-9. National and State forest policies.—FRANK L. MOORE. **U. S. Paper Maker,** lxii, 24 (Nov. 15, 1920). Report of committee on Forest Conservation at fall business conference, Nov. 11, 1920. Proposed legislation for the nation and the individual States is given. —C.J.W.

B-9. The wood pile, the foundation of the paper industry. HUGH P. BAKER. **U. S. Paper Maker,** lxiii, 4 (Jan. 15, 1921). **Paper Trade Journal,** lxxii, 3 (Jan. 13, 1921.) There are enough productive forest lands east of the Mississippi river to give us the forests which will not only produce all the wood we need for the paper industry in the future in this country, but will make us a much greater export nation as far as pulpwood, pulp, and paper are concerned, than any other nation in the world.—C.J.W.

K-10. Substitutes for alum in sizing paper. W. E. BYRON BAKER. **Paper Industry** ii, 9, (Dec. 1920). Ferrous sulphate may be used in the lowest grade papers, but in the better grades it causes discoloration and also impairs the strength of the sheet because of the alternate oxidation and reduction. Niter cake or sodium bisulphate may be used to replace half the alum. When used alone, niter cake will not produce nearly so bulky a precipitate, and to secure the same desired sizing effect it is necessary to increase the amount of size per ton. Sulphuric acid may be used as a size precipitant but does not produce so bulky a precipitate as niter cake. Magnesium and zinc sulphates may also be used; they form bulky precipitates, have a slightly lower precipitating power than alum, and leave a neutral "back water" in the beater. They must be substituted for alum when viscose is added to the beater. In the usual methods of paper manufacture, some form of acidity (niter cake or sulphuric acid) should be added, so as to have the back water acid.—C.J.W.

K-20. Parchment making. World's Paper Trade Review, lxxiv, 26 (Dec. 24, 1920). A short account of the process of making parchment and uses made of the margins left after cutting.—A.C.

L-5. Cellulose acetate. H. J. H. FENTON and A. J. BERRY. Proc. Camb. Phil. Soc., **20,** 16-22, (1920); J. Soc. Chem. Ind., **39,** 624A, (Sept. 30, 1920). Various substances have been tried as substitutes for acetone as solvent. The authors find no objections to esters as dope constituents, and as far as weak acids are concerned, tensile strength detns. gave excellent results, fabrics doped with acetic acid as the principal solvent comparing most favorably with others. No general conclusion can be drawn as regards the chem. nature of a liquid and its solvent action on cellulose acetate, but there appears to be some relation between the dielectric constant and solvent action. For the detn. of the acetyl group the authors prefer Ost's method of cold alkaline saponification (J. Soc. Chem. Ind., **31,** 713, 1912). Cellulose acetate differs considerably from cellulose in its power of adsorbing various dyestuffs.—A.P.-C.

L-6. Alkyl celluloses: methods of preparation and uses. CLARENCE J. WEST, Information Dept., A. D. Little Inc. Paper, 15,32,34. (Aug. 4, 1920). Translation of an art. by Wedorf in Kunststoffe, June 1, 1920. A description of the Lilienfeld patents. Eng. patents No. 12,854 (1921), 6,035 (1913); U. S. patent No. 1,188,376; Fr. patent No. 468,162; Swedish patent No. 66,512. The general method of preparation consists in treating the cellulose with the Etester of inorganic acids e.g., EtCl, EtBr, Et_2SO_4, in the presence of alkali. The properties and various possible uses of the cellulose ethers are described.—A. P.-C.

L-7. Artificial wool from cotton waste. South African J. of Industries; Chem. Met. Eng., **23,** 696, (Oct. 6, 1920). A process has been discovered by which artificial-wool can be produced from cotton waste; the basis of the artificial wool is cellulose acetate, and it is claimed that the material is an even better insulator against heat and cold than ordinary wool, that it will wear well and that it can be dyed any color. One of its limitations is its liability to break and its inelasticity which prevent its use in the production of yarns on the worsted principle.—A.P.-C.

L-O. Paper handkerchief and container. Can. patent No. 204,810, S. B. McCUTCHEON and C. C. WHARTON, Richmond, W.Va., U.S.A., Oct. 19, 1920. An outfit of the character set forth comprising a plurality of handkerchiefs each having a tab extending from one corner thereof, a paper bag into which the handkerchiefs are to be placed after being used, and a waterproof paper envelope in which the handkerchiefs and bags are packed and sealed for sale. Claims allowed 5.—A.P.-C.

L-O. Production of mats of fibrous materials. Can. patent No. 204,944, The C. F. Burgess Laboratories, assignee of H. F. WEISS, Madison, Wis., U.S.A., Oct. 19, 1920. The herein described process for producing from wood fiber a highly absorbent product, which comprises the steps of reducing the wood to a cellulose pulp, washing and drying said pulp, mechanically shredding it in air into a uniform, porous, and fibrous mass with a spray containing adhesive material to cement the fibers together. Claims allowed 16.—A.P.-C.

L-0. Sanitary paper slipper. Can. patent No. 205,013, D. J. BIRKETT, Honolulu, Hawaii, Oct. 26, 1920. A thin fibrous paper web arranged to be formed into a slipper whereby a foot may be covered while a shoe is being fitted thereon to prevent infection by said shoe, said slipper being adapted to readily conform closely to the foot so as not to interfere with proper fitting. Claims allowed 9.—A.P.-C.

M-8. Pump for acids. Can. patent 198,770, H. TOBLER, Hackensack, N.J., U. S. A., March 30, 1920. Claims allowed 15.—A.P.-C.

M-8. Attachment to pump to prevent the entrance of sand thereto. Can. patent No. 202,732, H. L. PEARSE, "The Gums" Station, near Mount Mary, S. Australia, Australia, Aug. 10, 1920. An attachment to a pump for the purpose set forth, comprising a length of pipe attached to the bottom of the pump, and forming the suction pipe of same, a cylindrical chamber encircling said length of pipe and having inlet openings at or near the top and a closed bottom, the closed bottom being slighty below the bottom of the pipe, and a screw-threaded cap whereby the cylindrical chamber is attached to the length of pipe. Claims allowed 5. — A.P.-C.

N-4. Returning condensate directly to the boiler. GEORGE S. BARKER. Paper, 26, 28, (Sept. 22, 1920). Description of the Simplex Condensation Pump and Simplex Boiler Feeder made by the Farnsworth Co., Conshocken, Pa.—A.P.-C.

N-4. Fuel economy symposium at the 6th Chemical Exposition. Chem. Met. Eng., **23,** 658-60, (Oct. 6, 1920). Brief acct. of the papers presented. In "**Burning Coal at 100% B. T. U. Efficiency**", W. O. Renkin strongly advocated the use of powdered coal as being the most efficient method of burning coal. He illustrated this with a chart giving the relative B.T.U. recovered in the boiler room for 1c. at present fuel prices. The early mechanical difficulies in connection with the prepn. and distribution of powdered coal have been commercially overcome, thereby making it possible to use much of the low-grade coal heretofore wasted, and coal having as high as 25% ash can be used easily and efficiently. In burning coal in powdered form all excess air is always under control and can easily be eliminated when necessary, as the powdered coal is fed into the furnace in a cloud where each particle quickly unites with the air needed for combustion, thus securing the greatest B.T.U. efficiency. In "**Saving Fuel by Controlling Chimney Losses**" F. F. Uehling stated that no matter what kind of fuel was used the biggest loss is always due to the heat energy wasted up the chimney. The extent of this loss depends on 3 factors: Excess of air in the products of combustion, which is detd. by the % of CO_2; the amt. of unburned fuel in the products of combustion, indicated by the % of CO ; the temp. of the products of combustion, which can be detd. with an ordinary flue thermomether in the last pass just before the gases enter the stack. The practice of instructing the firemen to keep the % of CO_2 as high as they can has led to surprisingly good results in reducing the chimney losses. In "**Reducing Conduction and Radiation Heat Losses**", S. L. Barnes describes the advantages of insulating bricks composed of diatomaceous earth (kieselguhr). Insulating bricks of diatomaceous earth are claimed to be fully ten times more efficient as non-conductors of heat in the construction of high temp. equipment than are firebrick or ordinary red brick. In "**Increasing Conduction and Reducing Fuel Consumption**" W. R. Van Northwick described the detrimental influences of soot and feed water scale on boiler efficiency. "**Fluid Heat Transmission**" by Alexander B. McKechnie. In the design of a fluid heat transmission system there are 5 Fuel economy symposium, main factors requiring most careful study: design of heater or absorbe, type of circulating pump, type of system, quality of circulating oil, and construction of pipe lines. The efficiency of a properly-designed and engineered system compares favorably with that of high-grade boiler construction. Other papers read were "**Producer Gas and the Modern Mechanical Producer**" by W. B. Chapman; "**Refractory Cement: Life Insurance for a Furnace**", by F. W. Reissman; "**The Reason for the Fuel Saving in the Dressler Kiln**", by Conrad Dressler.—A.P.-C.

R-9. Paper tariff hearing.—Paper Trade J., lxxiii, 7 (Feb. 10, 1921).—The complete report of the testimony presented to the Ways and Means Committee of the House to show why the manufacturers of paper in this country should be protected against future foreign competition. The article contains a great deal in the way of valuable statistics of the industry.—C.J.W.

UNITED STATES NOTES

George H. Carter, who has been clerk of the Congressional Joint Committee on Printing since 1911, was confirmed last week as President Harding's appointee for the place as Public Printer. Mr. Carter, prior to the time he became connected with the Committee on Printing, had been secretary of the Printing Investigating Committee. He was also associated since 1911 with the Special Committee on Government Paper Specifications. Born in Mineral Point, Wis., in 1874, Mr. Carter received his early education at the Le Mars, Ia., High School. Beginning as a typesetter and job press operator at Le Mars, Mr. Carter held down places in various editorial capacities on the staffs of numerous papers in the Middle West until 1907 when he became copy editor and assistant telegraph editor of the Washington Post. In 1909 and 1910 he was Washington correspondent for various Iowa newspapers. The new Public Printer is the author of the Congressional Printing Handbook and compiler of numerous Congressional documents. He last year completed a course at the George Washington University Law School and was admitted to the bar of the Supreme Court and the Court of Appeals of the District of Columbia. Mr. Carter is a charter member of the National Press Club of Washington and honorary life member of the International Printing Pressmen and Assistants' Union of North America. He is also a Knight Templar, Shriner, and 33d degree Mason, honorary inspector general, and belongs to the Phi Kappa Psi Fraternity. He was married in 1904 and has one daughter.

The eastern sales office of the Nuera Paper Company at 200 Fifth Ave., New York, will be in charge of William B. Hunter after April 16. Mr. Hunter is severing his connection with the American Writing Paper Company which he served for six years, four of which were spent in the various mills and two in the New York sales offices of that company. The Nuera Paper Company is manufacturing at Hadley, N. Y., all kinds of paper specialties, including photo mounts, calender backs, box covering, regular cover paper, cover specialties, jute and manilla tag, and box boards.

The Penobscot Chemical Fibre Company, Old Town, Me., is planning to utilize white birch as a base for pulp manufacture. Results of experiments are said to have been so satisfactory both with this and other kinds of wood that it is believed that in another year practically every kind of tree of the company's tract will be peeled for use in making pulp. While all trees are not equally adaptable to the making of pulp, the harder ones, cooked longer and mixed with the softer varieties, make the supply hitherto depended on for the making of pulp go much further.

A permanent exhibit of hand-made paper appliances is being prepared to fill cases in the Graphic Arts Division of the United States National Museum, Smithsonian Institution, Washington. It is to include examples of laid moulds of different sizes which have been used for making hand-made paper in old established mills in Europe. Also moulds which have been used in forming light-and-shade watermarked portraits—the most complicated form of water-marking paper. The dies and appliances used in making these moulds are shown, as well as specimens of paper from the moulds. Samples of paper with the watermarks may be seen, dating from the middle of the fifteen century to the present, showing the different stages of development that took place in the laid and wove moulds during that period. Deckle edges of all varieties are to be exhibited, also illustrations and photographs of old mills interiors, heating engines, etc.

According to figures just given out by the United States Department of Agriculture, the Coast States of Oregon, Washington and California hung up a new record for consumption of pulpwood in 1920. The statistics show that the amount of pulpwood consumed in the three States last year exceeded the highest record previously made by 23,000 cords, or 7.4 per cent. The 1920 production exceeded that of 1917 by 14 percent.

Directors of the Minnesota and Ontario Paper Company have announced a further reduction of $17 a ton on newsprint paper to publishers. This concession, together with that of $8 a ton made on January 1, reduces the price from $138, as fixed by contract until July 1 next, to $113 a ton for the next three months.

With the completion of their third plant, adding 110,000 square feet to its floor space, Owens and Traeger, Hoboken, N. J., are now running what is reputed to be the largest solid paper box factory in the world. The combined plants have total floor space of about 200,000 square feet. The new plant is the last word in fireproof construction and combines all the features of the most up-to-date factory buildings. The waste and dust of the factory is all taken to a fireproof chute, by which it is conveyed to the first floor in each plant where it is baled up in a fireproof vault. The several buildings are equipped with complete sprinkler systems. The concern manufactures everything in the stiff paper box line from the cheap carton to the finest satin lined boxes, covering the requirements of such concerns as soap makers, perfume, face-powder, candy, shoe and other manufacture. Shipping containers and folding boxes are also being added to the firm's line, and plans are under way for the making of mailing tubes and round boxes with either paper or tin caps. The company delivers to any point by motor trucks and car-load lots.

An engineering department, equipped to furnish counsel on all matters relating to the mechanical end of the paper converting industry has been formed by the Industrial Foundation, Inc., 50 Union Square, N. Y. The work of this department will cover the practical development of ideas and patents, supervising the equipping of new plants, counsel on operating efficiency of established plants, the designing and building of special machinery and general advice and research work. Kurth Wendell, president of the Foundation, will be in charge of the department, assisted by able associates.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, April 9. — Business in both pulp and paper circles continues dull with little improvement reported either by the manufacturers or jobbers. Printers are buying very little stock and the job printing houses are quiet, while the fact that there is a possibility of a strike over the demand of the printers in most of the larger cities of Canada for a 44-hour week and an increased wage scale, which may come to a head on May 1st, is not calculated to improve matters. Comparatively few of the pulp and paper mills are running at capacity, with the possible exception of the newsprint machines, which are busy, although there is no great demand for newsprint for spot delivery. In practically all lines of paper the demand is strictly limited to the requirements of the moment, due to the fact that there is no stable market and the impression prevails that prices have still got to go lower. Few transactions are being made in either mechanical or chemical pulp and the demand is very slack. Ground wood is still quoted at from $40.00 to $50.00, easy bleaching sulphite at $95.00 to $100 and news grade sulphite at $70.00 to $80.00, but in some instances deals have been closed at slightly delow these figures.

PULPWOOD. — Pulpwood contractors report that there is practically no market for pulpwood at the present time and the whole industry appears to be in a state of suspended animation. No contracts are being made, the mills holding off until they find out what is going to happen. They have large quantities of pulpwood on hand and as there has been a very large reduction in consumption, none of the mills are able to say just what their requirements are going to be for next year. Of many mills that were communicated with by a contracting firm in Toronto, only one was in a position to give any idea of what they would be wanting next year, a situation which is readily understood, partially from the fact that no price for next year's supply has yet been fixed. Heretofore the price has been fixed from a month to six weeks before the present date. The Toronto contractor referred to above states that his company is shipping some wood still, but it is on old contracts. The prediction is made that the production of sap-peeled wood will be large this year, the impression being general among the farmers that they will not be able to sell their rough wood next year.

BOX BOARD. — Both box board mills and jobbers are going through a very quiet period. The demand is light and none of the mills are running at capacity. The Campbellford mill of the Canada Paper Board Company is running six days a week, Montreal four days and the Frankfort mill four days a week and other mills in this line are running correspondingly light. There have been no changes in prices of late, chipped board being still selling at $60. Dealers report that very little board is being imported from the United States.

BOOK PAPERS AND BONDS. — Although the demand in these lines is light enough orders are coming in to considerably help in the reduction of jobbers' stocks which are gradually getting down to normal again under the policy of conservative buying from the mills. Orders continue small in size but fairly satisfactory in total bulk. No. 3 book, m. f. is quoted at $11.75 and s. c. at $12.25, with No. 2 m. f. at $12.85 and No. 2 s. c. at $13.35. No. 1 m. f. is selling at $14.00 and s. c. at $14.50, these prices f.o.b. mills. In sulphite bonds, whites are selling at 18c, tints at 19c and colors at 20½c with sulphite ledgers half a cent in advance of these prices.

WRAPPING PAPERS. — Stimulation of such lines of trade as the ice cream and confectionary business, due to the warmer weather, has reflected itself to some extent in wrapping paper sales, although on the whole, business in this department of the paper trade is dull and mills and jobbers are finding it hard to get business. A feature of the trade appears to be that collections by jobbers for goods sold have kept up fairly well during the slack period and the percentage of losses has been comparatively small. Active selling campaigns by both mills and jobbers are only yielding small orders and it appears doubtful if prices have yet reached rock bottom. In the meantime goods are selling at prices as last quoted in these columns.

GUMMED PAPER. — Manufacturers of gummed papers report that business has been very dull for the past few months, although an improvement has been noticed, March having been a fairly satisfactory month. Gummed Papers, Limited, Brampton, Ont., report that they have been able to keep their machines running and the indications are that they will not have to shut down for want of orders at any time. Prices on all materials have, of course, been dropping and the orders that are coming in are small and customers apparently have the impression that the bottom has not yet been reached. The company mentioned writes: "We have taken the opportunity of this dull period for overhauling our machines and installing other machines of an improved type and expect to be better prepared than ever to take care of the gummed paper, waterproof paper and cloth lined requirements."

RAG AND PAPER STOCKS. — There have been no new developments in prices on cotton cuttings during the last week. Mills remain uninterested in offerings and the market therefore has been purely nominal. Occasional small lot transactions have been reported, but the volume of business done has been lower than ever. Dealers in most cases do not know what to quote and show little interest in packers' offerings unless the price is sufficiently low to protect them against further decline. The one favorable feature in the market has been the fact that production of cuttings has continued very restricted. No. 1 white shirt cuttings have been dull with sales made as low as 10½c. The market on old cotton rags has been showing easiness in spite of the fact that to most packers present prices seem too low for any of them to want to do business. Paper mills have not reported any increased operations, and orders from them are very difficult to obtain until demand from this source picks up. Dealers state that they will remain, as far as possible, out of the market, and will buy practically nothing from smaller packers.

ROOFING RAGS. — The roofing manufacturers have shown a little more interest than the paper manufacturers, but the total business done with them has not yet been sufficient to keep prices firm. An added factor in the easy tone of the market has been the fact that at this time of the year it is usually expected that prices will ease on account of Spring collections of rags. Country mills have large stocks of mixed rags on hand, and with the present freight rates it is hardly likely there will be as much collection this summer. The roofing rag situation has been easier, one large dealer having reported being able to buy a tonnage of mixed satinettes as low as 60 to 65 cents per cwt.

WASTE PAPER. — The situation in the waste paper market has not changed for the better: if anything the demand from the mills has been smaller than ever. Nearly all paper manufacturers are running at a fraction of capacity while some have been closed entirely. Except when in need of special grades of stock for immediate use, mills stay out of the market, and dealers have been unable to make sales without further concessions. The fact is that most dealers realize that pressing for sales at this time is an almost futile job, and have been standing back waiting for the demand to revive. Few dealers care to say definitely when this revival is to be expected, but the opinion is that the position of this market must soon change for the better. This opinion, it might be stated, is based on hope rather than any foundation of fact. The price on mixed papers has become so low that even when stock is obtained from producing sources for practically nothing, the cost of labor and freight prevents any profit. In regard to the lower grades this situation seems more or less hopeless. At present mixed and newspapers have been influenced by the fact that ground wood has sold at very low levels during the past week. The prices quoted are to be considered as purely nominal. Actual sales are being made in some instances at considerably less than these prices.

	Per Cwt. f.o.b. Toronto.
No. 1 shirt cuttings	$10.50—11.00
No. 1 unbleached cotton cuttings	7.00— 7.50
No. 1 fancy shirt cuttings	6.50— 7.00
No. 1 blue overall cuttings	7.00— 7.50
Bleached shoe clip	8.50— 9.00
White cotton hosiery cuttings	11.00—12.00
Light colored hosiery cuttings	10.00—10.50
New Light flannellette cuttings	8.50— 9.00
No. 2 white shirt cuttings	6.50— 7.00
City thirds and blues (repacked)	1.40— 1.60
Flocks and satinettes	.70— .80
Tailor rags	.60— .65
Gunny bagging	.80— .90
Manila rope	2.75— 3.00
No. 1 white envelope cuttings	3.00— 3.50
No. 1 soft white shavings	2.75 3.00
White blanks	1.40— 1.50
Heavy ledger stock	2.25— 2.50
No. 1 magazine	1.60— 1.70
No. 1 book stock	1.20— 1.30
No. 1 manila cuttings	1.50— 1.60
No. 1 print manila	.70— .80
Folded news	.60— .70
Over issue, news	1.00— 1.15
Kraft	1.60— 1.80
No. 1 clean and mixed papers	.35— .45

NEW YORK MARKETS.

New York, April 9 — (Special Correspondence.) — Aside from a further sagging of prices on some grades, the paper market has lacked important development this week. There is still very little demand of note. Buyers are operating solely in hand to mouth fashion, and the spot trade is almost at a standstill. In fact, were it not for the customary amount of contract business, the market would be nearly altogether inactive. The manner in which consumers are buying paper clearly reflects the dullness prevailing in various lines, and judging from the way in which matters are shaping up it begins to look as if there will hardly be any worthwhile improvement in general commercial conditions before the autumn.

Quotations on both finished paper and on raw material are steadily moving lower. Notwithstanding that production of paper and board, as well as pulp, rags and other raw stock, has been greatly reduced, the market is unquestionably topheavy with supplies, and this condition tells the story. It is not surprising that prices are falling when there is not demand enough to absorb the goods placed on the market; moreover, there appears little likelihood of the decline in values being checked until demand broadens considerably.

In a statement issued several days ago, President Philip T. Dodge of the International Paper Company says that the mills of his company are operating at only 50 per cent. of capacity owing to the recession in newsprint demand. President Dodge traces the present market condition back to the action of publishers in 1920, when it was feared newsprint production would fall short of their needs, and when they swept the spot market, here and abroad, bare of supplies at fancy prices, taking no account of the cessation of wartime prosperity in general business. When publishers, finally encountered some curtailment of advertising, Mr. Dodge states, they stopped buying paper and began to use their stock. Some of this stock came back into the spot market, and, although small in quantity, this with imported newsprint was sufficient to break the narrow spot market. Mr. Dodge points out that charts compiled by the Newsprint Service Bureau show that inventories of mills and consumers are slowly but very steadily diminishing, and says that the time is not far off when publishers will again have to buy at a rate equal to their consumption. He also emphasizes that Federal Trade Commission figures show February production of all grade of newsprint was far less than the February, 1920, production and even less than in February, 1919, with stock on hand at all mills at the end of February equal to but nine days' supply. Mr. Dodge believes that prices on newsprint must stay high for a year or more because it will take that long to use the pulpwood bought at wartime prices. Also, he says, increased freight rates have cut heavily into profits, for it requires three tons of materials and coal to make one ton of paper. Advancing freights in the last three years, he asserts, have added $9.60 per ton to the cost of manufacturing newsprint.

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INQUIRIES SOLICITED

The contract basis on newsprint remains unaltered, with the I. P. price 5.50 cents per pound at mills for standard rolls, and with smaller producers quoting from this figure down to around 5 cents. The spot market is bordering into demoralization. There is very little demand of worthwhile proportions and the offering of so-called distress lots at extremely low levels is greatly disrupting prices. Manufacturers are quoting in the neighborhood of 5 to 5.50 cents a pound at mills, but with buyers able to get supplies at considerable below these figures, they obviously are absorbing few or no lots at the basis asked by mills.

Additional declines have occurred in book papers. Machine finished book is available down to 7.25 cents a pound, with quotations ranging from this point up to 9 cents for the better grades. Super book is offered in at least some quarters at about 9 cents, while coated book is quoted at from 11 to 13 cents a pound. Most of the coating mills are reported closed down and filling current orders from stock.

Down to as low as 85 cents per ream has been reported quoted on No. 1 white tissue, basis 20 x 30, and No. 2 white and No. 1 Manila tissue are offered at 80 to 85 cents a ream. Even at these prices there is but a slight demand for tissue paper. The leading producer of No. 1 domestic kraft wrapping paper has reduced its prices to 8 cents, which means that other manufacturers quote around 7.50 cents. There is also a lack of important demand for wrappings, and all grades tend lower in price. Rogus wrapping is said to be available at as cheap as two cents per pound.

Fine papers are moving merely in limited-sized quantities and at gradually declining prices. An average good grade of sulphite bond is to be had today at 12 cents a pound, with one of the leading producers in the States quoting 14 cents on a widely sold brand. An average of prices on all-rag bonds is in the vicinity of 28 cents per pound.

Boards display little fresh trade activity. Some mills have jacked up prices slightly but there is at least one large manufacturer in the East offering plain chip at $30 per ton and filled news board at $32.50, and the bulk of buying done is at about these figures. Board mills as a whole are running at only approximately half of capacity, despite which they are having difficulty disposing of their output.

GROUND WOOD.—Quotations on mechanical wood pulp have touched new low levels. There have been sales recorded this week down to $30 per ton at producing plants, and while possibly only distress lots have been sold at this basis, the fact remains that consumers have secured some supply at this low level, and consequently are indisposed to pay more. Grinders in various parts of the country are reported closing down their plants rather than make pulp for which they have no outlet, and there are those in the trade who believe that this loss of production will have telling influence on the market later when consumption increases. Offerings of good-sized tonnages of prime spruce ground wood at around $35 a ton are quite numerous and receive but little reception from buyers.

CHEMICAL PULP. — The chemical wood pulp market continues in the doldrums insofar as concerns the volume of business being transacted. Consumers are operating as buyers in the same way that has marked their activities for several months, and are absorbing but small amounts of pulp against direct requirements. It is indeed difficult to ascertain what values are. The market lacks a definitely established price basis, and pulp is being disposed of in some cases at surprisingly low figures. Foreign pulp, for example, is being offered on the spot in this country at prices far below replacement costs at primary sources. Swedish manufacturers quote in the neighborhood of 8 cents per pound for No. 1 bleached sulphite for forward shipment, whereas spot pulp of this kind is available in at least small lots at 6 cents ex-warehouse. Recent quotations on Swedish easy bleaching sulphite for shipment from the other side range around 6 cents, while spot easy bleach can be bought at 4.75 to 5 cents, and Scandinavian kraft pulp is offered on spot in New York at less than 4 cents, although shipment prices on the same grade of pulp in primary markets are up around 5.25 cents. This situation would infer that owners of imported pulp now in the United States are pocketing rather severe losses in liquidating their stocks.

RAGS. — There is very little trading current in papermaking rags. Consuming mills are mostly keeping entirely out of the market, while those few which are buying are taking only minor quantities actually needed for immediate use. Prices are soft and are moving lower. Roofing rags have declined this week after having held relatively steady for quite a period. Purchases of No. 1 roofing by felt mills have been reported at 85 to 90 cents per hundred pounds at shipping points, and of No. 2 packing at 75 to 80 cents. New cuttings are scarcely wanted at any price and it is questionable how long they can be obtained. Old whites and blues are selling in small parcels at basic prices of approximately 6.50 cents for No.1 repacked whites and 2.50 cents for repacked thirds and blues.

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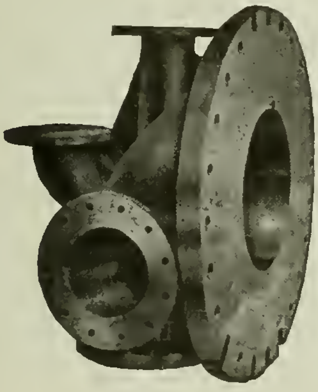

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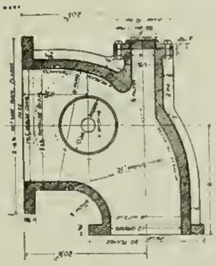

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PAPER STOCK.—The market for low grades of old paper is completely demoralized. Demand has all but entirely disappeared and prices have sunk to levels where packers are obliged to lose as much on stock as they receive for it. No. 1 mixed paper is freely offered at 25 cents a hundred pounds at shipping points, and there have been some sales at under this level. Folded newspapers have commanded few buyers among mills at 35 to 40 cents. Overissue newspapers have sold at 50 cents, white new cuttings at 1.50 cents, heavy flat magazines at 90 cents and old No. 1 kraft paper at 1.40 cents. Conditions are such that dozens of small collectors and packers are being forced out of the industry in New York and elsewhere because they cannot make a livelihood from their operations. Consuming mills are not in need of supplies owing to their curtailed production, and haven't the facilities for storing up more than they now have on hand; consequently the movement of stock toward mills is close to a standstill. Shavings are in light demand and are quoted at around 3.25 cents for No. 1 hard white and 2.25 cents for No. 1 soft white. Ledger stock is offered at around 1.50 cents at shipping points without attracting many buyers.

OLD ROPE AND BAGGING. — Old rope holds comparatively firm in price, this being evidently due more to light stocks and small importations than to any voluminous demand from paper mills, and No. 1 rope is bringing between 3.75 and 4 cents per pound at shipping points. Old bagging is little wanted and is strictly nominal in price at around one cent a pound.

IMPORTANT NEW ADDITIONS TO RIORDON BOARD.

A number of interesting changes in the board of directors of the Riordon Company, Limited, were announced over the week end, following a meeting of the board on Saturday. Charles Riordon has retired from the presidency of the organization, becoming honorary president, and is succeeded by his son, Carl Riordon, formerly vice-president. Frank P. Jones, succeeds Carl in to the vice-presidency, and it is expected that he will take a broad, active interest in the management of the company from now on. Three other new members were added to the personnel of the board in the persons of George M. McKee, Donaconna, Que., F. N. Southam, Montreal, and Fred E. Bronson, Ottawa, Ont.

Nothing was said on the conclusion of the meeting regarding the new financing which the company has in contemplation, but some developments are expected during the course of the next week or so, which will cast greater light on the matter.

The new directors added to the board, have broad Canadian financial and business connections.

Frank P. Jones, who was elected to the vice-presidency is one of the best known of Montreal's younger business and financial men. He is vice-president and general manager of the Canada Cement Company, Limited, and is also connected with a number of other prominent Canadian organizations including: director, Canadian Bank of Commerce; director, Montreal Trust Company; director, Ontario Steel Products, Limited; and president Consumers' Glass Company, Limited. A native of Brockville, Ont., Mr. Jones, when he graduated from the Royal Military College at Kingston, began his business career for the D. F. Jones Manufacturing Company, Gananoque, as fireman. He later joined the sales force of the Nova Scotia Steel and Coal Company, later joining the Dominion Steel forces. He became general manager of the Canada Cement Company in 1910.

George M. McKee, another new addition to the board was recently elected to the vice-presidency of the Canadian Pulp and Paper Association. He is managing director of the Donnacona Paper Mills, Limited. He has been associated with this company since its inception in 1912. Mr. McKee is given a great deal of credit for the company's success, and it was he who conceived the idea of naming the company and its mill after the old Indian chieftain Donnaconna. He has been largely instrumental in building up the company's business in the past decade, and the founding of the prosperous community of Donaconna, the mill's townsite. He is a member of the American Society of Mechanical Engineers, and a member of the American Electro-Chemical Society.

F. N. Southam, Montreal, is vice-president of William Southam & Sons, Ottawa, owning and controlling the Southam Press, Limited, Montreal and Toronto, as well as a large number of newspapers in various Canadian cities. These are: The Spectator, Hamilton, Ont.; The Citizen, Ottawa, Ont.; The Tribune, Winnipeg, Man.; The Herald, Calgary; The Journal, Edmonton. Mr. Southam is also a director of the Crown Trust Company, Montreal. He is a native of Hamilton and has been largely instrumental in building up the large Southam business interests throughout Canada, from the early beginnings of the Hamilton Spectator. He entered the Southam organization early in his business career.

Fred E. Bronson, the other new director, is president of the Bronson Company, Ottawa, manufacturers of electricity and pulp. He is a director of the Ottawa Light, Heat and Power Company. Mr. Bronson has been connected with the Bronson Company practically all through his business career. He is also connected in an official capacity with a number of logging and booming companies.

PULPWOOD BUSINESS AT STANDSTILL.

The pulpwood business in Quebec, like the lumber trade, is practically at a standstill. Quebec dealers spoken to say they cannot account for the non-demand from the United States, except that the mills in that country are still stocked with wood and paper products. In the meantime the dealers, apart from those who were indebted to the banks, are not worrying: They say they can and will wait until conditions are better and the prices go up again. The French Canadian farmers who for some years past made pulpwood on their farm woodlands, have stopped making. They are doing just as was pointed out some months ago, taking things easy and vow they will cut no more pulpwood until the prices for the article again soar. The French Canadian habitant is an unsophisticated philosopher in his own way and cannot be moved after he has signed up things and come to a conclusion. He made heaps of money during the war that went to pay off all farm mortgages, and is still making money from his farm products, obtaining prices during the European conflict that he never hoped for.

News From Our Advertisers

USEFUL DATA ON DYEING.

The National Aniline & Chemical Co. Inc., has recently issued a very attractive color card, showing a comprehensive range of dyes for paper.

This range includes some fifty-two colors, although one hundred and forty-four complete dyeings are shown. This is probably the most complete color card for paper ever distributed in this country by any dye concern.

The dyeings are shown on bleached sulphite, unbleached sulphite, kraft stock containing 75 per cent ground wood and 25 per cent unbleached sulphite.

On the bleached sulphite twenty-four colors are shown, ranging through the different shades of yellow and orange to the scarlets, blues and violets.

On the unbleached sulphite are also twenty-four colors showing those most suitable for use on this class of stock, while a range of sixteen colors is devoted to mixed ground wood and unbleached sulphite stock, and sixteen illustrate the possibilities obtainable on kraft stock.

The colors are classified into three groups,—acid, basic and direct, and the samples shown are clearly marked so as to designate at a glance which group is indicated. Of these groups, the acid colors include a comprehensive range of bright colors of good fastness to light, used chiefly on sized papers; the basic colors possessing great tinctorial power, give more brilliant results, while the direct colors, used principally for the better grades of paper, are particularly adapted to the dyeing of unsized pulp.

NEW FIRM OF CONSULTING ENGINEERS.

Skinner, Sherman & Esselen, Inc. (Hervey J. Skinner, Herbert L. Sherman, Gustavus J. Esselen, Jr.) announce the organization of a firm of chemists and engineers. The new firm has acquired the business and good will of The Boston Bio-Chemical Laboratory and accordingly they are in a position to furnish counsel on all matters relating to the application of chemistry and biology to industrial operations.

Mr. Skinner is well known to the paper industry. For many years he was Vice-President of Arthur D. Little, Inc., and in immediate charge of pulp and paper work. For the past two years he has maintained a consulting office in Boston.

Dr. Esselen is known to the cellulose industry as the Secretary of the Cellulose Section of the American Chemical Society, and for his work on cellulose esters and cellulose acetate silk. The combination of Skinner and Esselen renders the new firm particularly qualified to be of assistance to the cellulose industries.

Mr. Sherman for many years was president of the New England Bureau of Tests and has extended experience in cement and other structural material problems.

The pulp and paper industry is to be congratulated on this new addition to the list of firms who are in a position to be of assistance to them in matters relating both to research and development.

The address of the new firm is 248 Boylston St., Boston, 17, Mass.

A laugh is worth a hundred groans in any market. — Charles Lamb.

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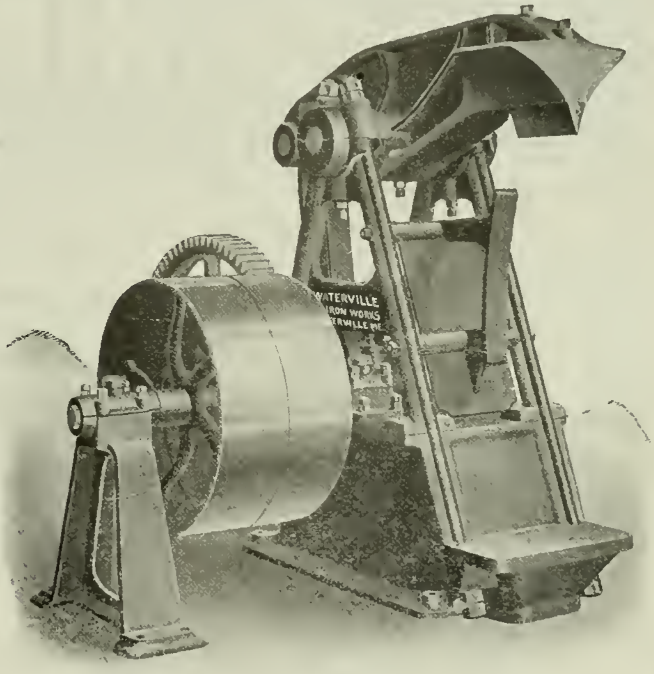

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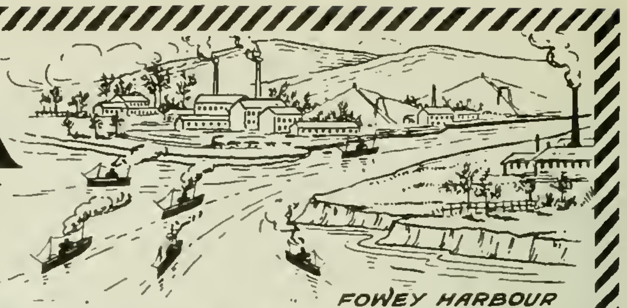

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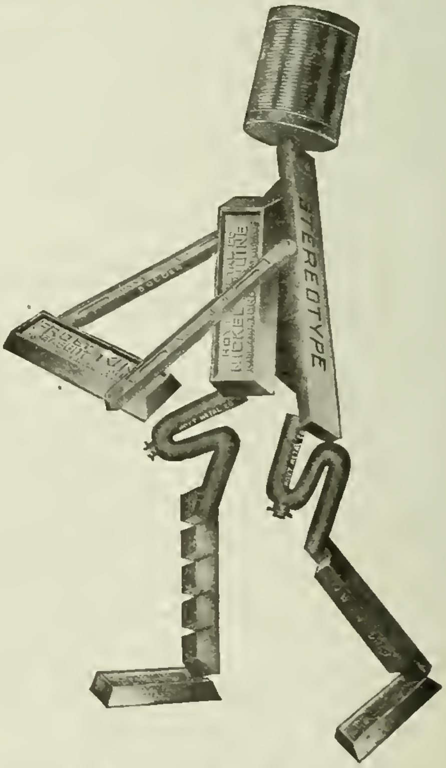

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OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XVIX. GARDENVALE, P. Que., April 21st, 1921. No. 16

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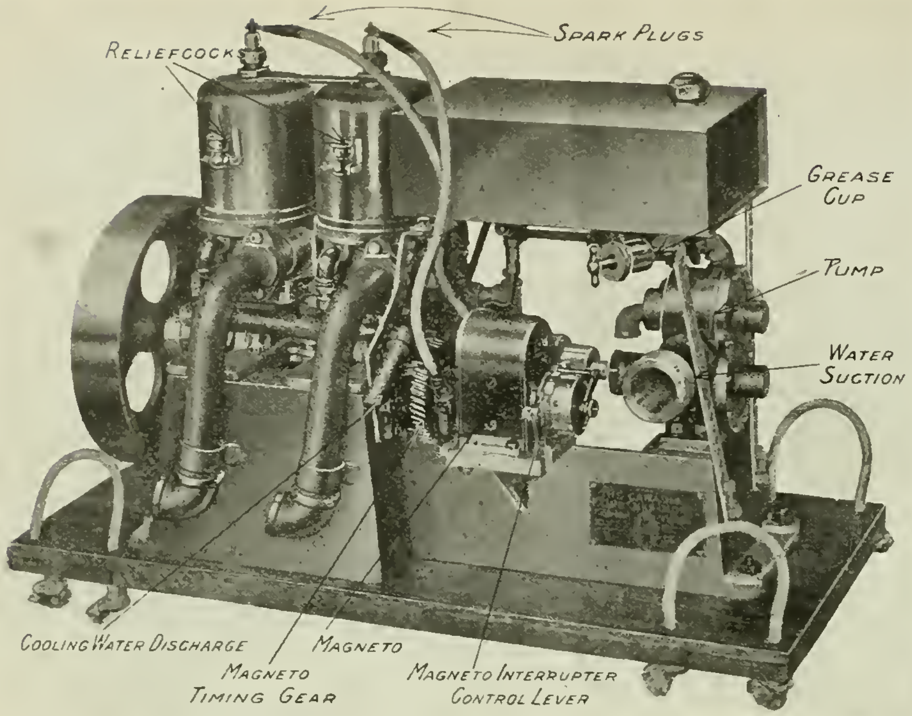

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EDITORIAL

THE TURNING POINT.

It is quite certain that in the forty-four years of its existence, the American Paper and Pulp Association has never held an annual convention during so critical a period in its history as the present time. The feeling seems to be quite general that the industry is now passing through the dullest period that will be experienced. The disturbing uncertainty of the situation is in being unable to determine or predict how long the present dullness will continue. A decidedly cheering note was struck by Mr. Francis H. Sisson in his address at the banquet when he stated that the bankers of the United States are convinced that there is now no danger of a financial panic and that the nation is on a perfectly sound basis as regards general credit and banking ability.

Senator McCormick, while picturing rather dismal conditions in many sections of Europe, intimated a fairly sound political situation. He indicated that the principal difficulty financially, lay in excessive expenditures by greatly impoverished governments. The fact that England has weathered another threatened general strike and the probability of an early settlement of the miners' question shows that the world has taken one more step on the road to the resumption of normal industrial conditions.

The United States and Canada are without doubt in first place as regards the industrial, social and political situations. Both countries have financial and currency systems based on good sound gold money. Individual debts and high priced inventories are being liquidated and with the appearance of new goods made from raw materials purchased at the new low levels, there seems to be every likelihood that the psychological moment will be reached when the public will realize that retail prices have finally reached bottom and with this realization will come the confidence that goods can once more be purchased without fear of comparative loss because of the possibility of still further price reductions. Many commodities have already been marked down to what will doubtless be the price as manufactured from new lots of raw material; in fact there is a feeling that some lines have been reduced to a price which cannot be economically maintained even with the lowest costs of production that seem likely to be attainable in the near future.

The editor has had the opportunity of talking with a number of merchants in several lines, doing business in a country town where there are several mills representing paper, textile and other industries. These merchants maintain that business is, and has been good and that collections are satisfactory. Some goods have been marked down directly 25 per cent. or 30 per cent. and in some cases it seems a bit doubtful whether these goods can be replaced at a cost which will give profit at the price now asked for a similar quality. In fact there are some lines of goods which the wholesaler cannot promise to deliver, his supply and the manufacturer's stocks have been depleted and in some cases where the retailer has postponed ordering fall goods, he will have difficulty in getting them. This to our mind, suggests that people are continuing to buy what they need but are buying only as they need it. This will mean a steady flow of commodities in small streams and there may be some advantage in this condition with the likelihood of a gradually increasing volume rather than to have spasmodic out-bursts with corresponding periods of dullness.

A review of conditions in the paper industry indicates that the lines most seriously affected are not getting any duller although prices in some instances have been somewhat reduced, while several grades of commercial importance are showing a little better condition. The industries on this continent have seen worse times and while there is no use in closing our eyes to the seriousness of the present situation, there is need and reason to take courage and plan carefully for ways to improve the situation and to take advantage of the revival when it comes. Many mills have been girding themselves by improving their machinery, rearranging departments, and installing more efficient equipment and system. With the best labor conditions at present anywhere in the world, with plenty of raw material at hand and with the promise of easier credit for industrial developments in sight, it seems to us that Americans and Canadians have not only more reason for cheerfullness and hope as compared with other countries, but that our prospects for improved industrial conditions are, in general, good.

ON BOTH SIDES OF THE FENCE.

We should think it strange to find a man standing on both sides of a fence unless of course, it happened to be a very low fence, but this is not so strange when we learn that this man *is* Strange. His other name is John and he wrote a letter recently to an American contemporary in which he says "I am more than ever convinced now that there should be an import duty of at least $10 per ton on printing paper, $10 a ton on sulphite, $20 a ton on kraft pulp and paper and corresponding duty on all other kinds of paper, $5 a ton on groundwood pulp and $2 a cord on all grades of pulpwood.'' He further states that these estimates are given from the standpoint of the best interests of the people of the United States and that their adoption would result in lower prices to the consumer. He also says that these suggestions are made after a thorough investigation of the available wood supply in the United States and all of the other factors which enter into the manufacture of pulp and paper. In conclusion, the statement is made that the United States should manufacture not only all the paper required by that country, but enough besides to do business with many other countries.

The gentleman from Wisconsin has always been a firm supporter of the Republican party and consequently thoroughly believes in protection of American industries, principally by means of the tariff, and consequently sees in an import duty the only means for encouraging and protecting American's manufactures. In spite of his assertion that a careful study has been made on wood supply and other factors, we are inclined to consider as more reliable, the warnings of such men as Greely, Pinchot, Baker and Kellogg. The recommendations of Mr. Strange, in view of their generally accepted description of the forestry condition in the United States, places him on both sides of the fence. It would be a physical impossibility, according to all authentic reports, for the present stand of timber between the 49th parallel and the Rio Grande to supply the wood using industries of the United States at the present rate of consumption for as many years as Mr. Strange is likely to live. The idea expressed, that it is ignorance or political prejudice which is responsible for what he calls the mistaken policy of building up Canada's pulp and paper industry at the expense of the American, is neither complimentary to Congress nor appreciative of the efforts being made to conserve American forests for the use of American industries. One of the most potent factors in the conservation of American timber is the fact that pulpwood, pulp and paper can be brought into the United States and so relieve the severe burden on the American forests.

Placing a duty such as is suggested, if applied to forest conservation and scientific administration, might be of some advantage; however, where there is not sufficient raw material to produce more than about one third of the wood fibre papers consumed in the United States, such a duty would hardly prevent or even seriously diminish the sale of Canadian paper across the line but might ensure a little more profit to American manufacturers who have their own wood but would make it correspondingly difficult and unfair to the manufacturer who had to import either pulp or pulpwood.

The best point in this Strange letter is the recommendation for a duty of $2 a cord on all grades of pulpwood. The figure is right and the article is right but the duty should be put on the wood north of the line and should go to a fund for replacing, to the credit of the Canadian people, the pulpwood which is going to the mills in the United States. It is perfectly logical and fair that such a step be taken. All of the pulpwood cut from crown lands makes a return to the province in which it is cut and a part of this revenue is used for forest protection. Pulpwood cut on private lands makes almost no return, and that only indirectly, and contributes little or nothing to the protection and production of the timber capital which is depleted by the export of pulpwood. It is the export of this wood from private lands that is the sole salvation of many pulp and paper mills in the United States and the continuance of this supply is about the only hope for the recovery of their forest lands—at least in the eastern states—again to a productive condition. It is not fair that the people of Canada should thus hold the front trenches while their neighbors are re-organizing in the rear. The paradox in such a situation is that the mills thus kept alive and protected will continue to be the competitors of the Canadian mills whose future wood supply is depleted in proportion to the amount of these exports and their future correspondingly jeopardized unless such exports be made to pay for a re-established forest of at least like proportions.

SCHOOL SAFETY WORK.

The old saying ''Catch 'em young'' applies nowhere with more fullness than with regard to inculcating safety principles in the minds of school children. Boys and girls are then probably at the most reckless age, taking chances and dares either to avoid ridicule or to attract attention is an everyday event with many of them. The impulse to do something is followed by instant action and the thought of possible danger comes only when a serious accident has happened or has been miraculously escaped.

Persons interested in the Safety Movement fully realize the necessity of developing in the children who are to be our future industrial workers, an inclination, at least, to give a little thought to the possible consequences of impulsive action. If even a small proportion of the sad effects of thoughtless acts can be eliminated, safety work will have accomplished much. A number of public schools have grasped the idea and are making good records in the improvement of the attitude of school children in this regard. If young people can be taught properly to avoid automobiles, street cars, fire, objects on stairs and other common sources of accidents in everyday life, they will be careful later on with regard to belts, gearing, overhead cranes and other sources of accidents in the mills. At the Safety Convention to be held in Toronto next Wednesday and Thursday, there will be a special session on School Safety, a matter which cannot be successfully put into operation or bring the best results unless the school authorities get the full support and hearty cooperation both of the children and their parents.

Cost Accounting Fundamentals*

By B. E. HUTCHINSON.

Treasurer American Writing Paper Company and Vice-President of the Cost Association of the Paper Industry.

A great deal of serious work has been done throughout the industry during the past two or three years in the development of cost work. This is a meeting of paper manufacturers, and as such I take it you are interested only in the broadest aspects of accounting and cost work, and more particularly in their application to the conduct of the paper business. The few remarks I make will be based upon such an assumption, bearing particularly in mind that a free and frank discussion among ourselves of some of the issues involved will be of vastly more benefit than any contribution I am personally able to make upon the subject.

Accounting has been defined by someone as the systematic recording of facts. You will observe that according to this definition it is impossible to differentiate between "cost" and so-called "general accounting." As a matter of fact the only distinction between them is of degree and not of kind. General accounting or commercial accounting deals with a business as a unit, as a whole. Cost accounting proceeds a little farther, and analyzes the business by its products. Such analysis may proceed along either one of two directions, and should proceed correlatively along both, viz., an analysis of the operation of the business by departments, and an analysis of the business by products manufactured.

EXHIBIT NO. 1.

COMMERCIAL OR GENERAL ACCOUNTING

Suggested Operating Report.

GROSS SALES TO CUSTOMERS		$0,000,000.00
Less: Freight and Cartage Allowed	$0,000.00	
Returns and Allowances	0,000.00	0,000.00
NET SALES TO CUSTOMERS		0,000,000.00
NET MANUFACTURING COST		0,000,000.00
Gross Profit		0,000,000.00
Packing and Shipping Expense	0,000.00	
Selling Expense	0,000.00	
General Administrative Expense	0,000.00	0,000.00
NET MANUFACTURING PROFIT		0,000,000.00
OTHER INCOME		
Discount on Purchases, Interest on Bank Balances, etc.	0,000.00	
INCOME CHARGES		
Interest on Current Borrowings, Allowance for Bad Debts, Cash Discounts Allowed, etc.	0,000.00	
Net Total		0,000.00
NET OPERATING PROFIT		$0,000,000.00

In application, these two lines of inquiry differ somewhat in their general purpose, although the line of cleavage is far from distinct. An analysis of the operations of a company by departments is of value chiefly in that it furnishes a sound basis for the criticism of the manufacturing costs as well as of the efficiency of the various departments. The accurate knowledge of the labor costs in each department, the pounds of coal per pound of paper, the percentage of broke in each finishing department, and dozens of items of similar character undoubtedly contribute mightily to good management, particularly when they are compared, month by month, item by item, and progress is noted or retrogressions are investigated.

Any attempt on my part to enter into a detailed discussion of either commercial or cost accounting would run us into a very extensive category, and many differences of opinion would be developed. It seems to me, therefore, that progress immediately lies in restricting our discussion within the broadest possible lines and trying to find as many fundamental points of agreement as possible.

Exhibit No. 1 gives in the merest outline an operating statement which is suggested as applicable to the paper industry and as meeting the demand of good accounting practice. The item of Net Manufacturing Cost appearing in Exhibit No. 1 is still further analyzed in Exhibit No. 2 and furnishes the barest skeleton of a cost system. The application of the principles set forth therein to the manufacturing conditions of any particular mill is a highly technical problem, and is strictly within the province of the cost accountant. Both exhibits speak for themselves.

Successful industry is generally predicated upon a sound sales policy, and the management of industry frequently finds its sales problems to be more difficult of solution than the technical problems relating to the control of manufacturing operations. To these problems departmental costs and efficiencies can contribute but little. Here information is required on the relative costs of various products and the relative costs of the same products under varying conditions of raw material markets and labor costs. Neither is it sufficient for the accountant to restrict himself to the customary role of historian of the past, the "recorder of facts," but he must so present his facts that they may be intelligently applied to the consideration of the problems of the future, because the success of an industry depends not upon hindsight, but upon foresight. Our position tomorrow is determined by the sagacity which we apply to the solution of the problems of today, and our experience of yesterday is of value only in so far as it can be made to contribute to the wisdom displayed in laying plans for the future.

We have already observed the importance of sales in the successful conduct of an industry, and whatever may have been the experience of the immediate past, the time has now come when no sale is made without consideration of price as playing an important part in the negotiation. This is a factor upon which cost accounting can throw considerable light. It cannot be denied that, for competing manufacturers individually, the price at which a competitor may be willing to sell plays a vastly more important role than the cost of production at any particular plant; or, put in another way, sales generally must be made at the "market" regardless of cost, and yet upon examination this anomaly is more apparent than real. The so-called "market" is in the last analysis determined by costs. To sell regardless of cost is to invite ruin and court disaster, and when indulged in extensively carries its own remedy. If this fact can be recognized at the beginning, and the conduct of industry regulated accordingly, much bitter experience may be avoided. Cost accounting, practically applied, offers safer and saner council than "cut and try" experience.

---

*Presented at the quarterly meeting of the Writing Paper Manufacturers Association in Chicago, January 27, 1921.

Of what is a fair selling price composed? Broadly speaking, its elements divide themselves into two groups—the net manufacturing cost and cost above net manufacturing cost which includes a variety of items. In Exhibit No. 3 an attempt has been made to enumerate these items.

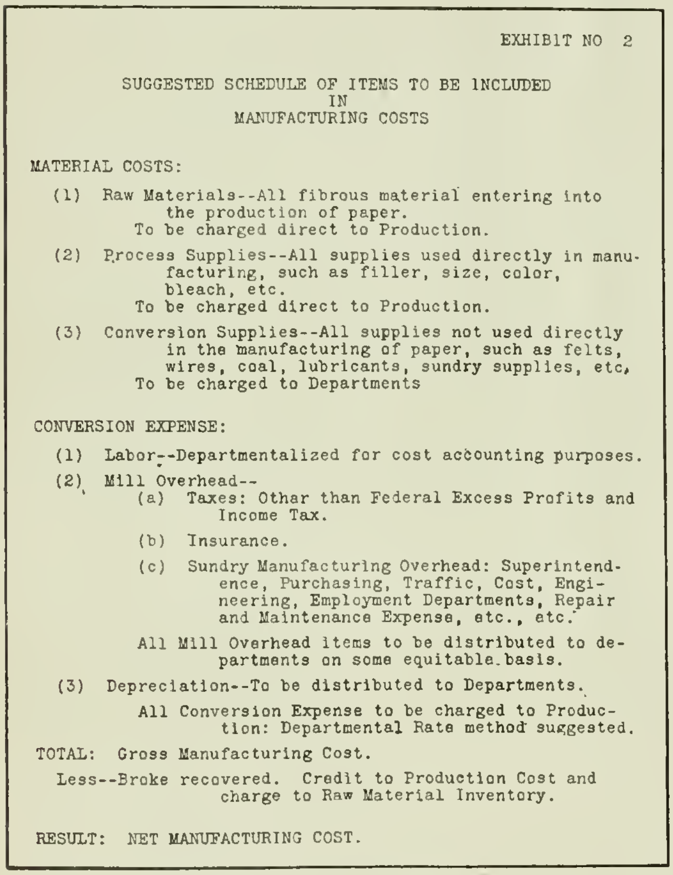


EXHIBIT NO 2

SUGGESTED SCHEDULE OF ITEMS TO BE INCLUDED
IN
MANUFACTURING COSTS

MATERIAL COSTS:

(1) Raw Materials--All fibrous material entering into the production of paper.
To be charged direct to Production.

(2) Process Supplies--All supplies used directly in manufacturing, such as filler, size, color, bleach, etc.
To be charged direct to Production.

(3) Conversion Supplies--All supplies not used directly in the manufacturing of paper, such as felts, wires, coal, lubricants, sundry supplies, etc,
To be charged to Departments

CONVERSION EXPENSE:

(1) Labor--Departmentalized for cost accounting purposes.

(2) Mill Overhead--
(a) Taxes: Othar than Federal Excess Profits and Income Tax.
(b) Insurance.
(c) Sundry Manufacturing Overhead: Superintendence, Purchasing, Traffic, Cost, Engineering, Employment Departments, Repair and Maintenance Expense, etc., etc.

All Mill Overhead items to be distributed to departments on some equitable basis.

(3) Depreciation--To be distributed to Departments.

All Conversion Expense to be charged to Production: Departmental Rate method suggested.

TOTAL: Gross Manufacturing Cost.

Less--Broke recovered. Credit to Production Cost and charge to Raw Material Inventory.

RESULT: NET MANUFACTURING COST.

However, the practical application of any generalities such are exhibited here presents a problem of its own and may easily affect materially the solution arrived at. May I take just a moment to comment upon these generalities?

I hope you will not consider me facetious if I remark that raw material is not always found to be worth what has been paid for it. We hear a good deal today about "cost or market, whichever may be lower," but from a manufacturer's standpoint when considering a selling price there is something to be said for "cost or market, whichever may be the higher." Academically speaking, no manufacturer desiring to avoid speculation should be committed for more raw materials than are necessary to clean up his order book, and when the millennium arrives, when customers no longer cancels orders, when unlimited supplies of necessary raw materials are always available for prompt shipment at fair prices, perhaps it may be possible to conduct a manufacturing enterprise without indulging in speculations in raw materials. Perhaps, but not now. In the meantime it is excellent to bear in mind that "one swallow does not make a summer," and that one low quotation does not mean that trading in volume can be accomplished on so favorable a basis. Of course, to the astute belongs "the bacon," and the manufacturer having on hand in a declining raw material the smallest surplus of material will be in an advantageous position to establish lower selling prices without loss to himself. However, as a word of obvious caution, be sure that a selling price is always based upon raw material costs which will bear the strain of volume trading.

With the exception of material cost, upon which we have just commented, I do not believe that there is anything under the caption "Net Manufacturing Cost" which can be considered contentious in making up the selling price estimate. It is largely a matter of fact.

Some considerations can, I believe, profitably be given to the items which must be taken care of in addition to the Net Manufacturing Cost and the principles under which these various items should be applied to the estimating of a selling price of an individual item.

Some may prefer to consider Packing and Shipping Expense an item of manufacturing cost and place it in the first group. There is no particular objection to this under some circumstances, but when a large variety of Packing and Shipping Expense is incurred, such, for instance, as when paper from the same mill is shipped in bundles, rolls, cases for domestic trade, and zinc-lined reinforced cases for export, it would seem desirable to keep this item separate and distinct from manufacturing cost and to consider the expense incurred for these different packings an item of the General Overhead Expense. In making up the selling price estimate for any particular item, however, the actual cost of the packing required would be used in determining the selling price in question and this would apply regardless whether Packing and Shipping Expense be considered as an item of Manufacturing Cost or as an item of General Overhead.

It is suggested that a reserve for Adjustments on Sales (returns and allowances) be set up on a percentage basis.

Cash discounts and Freight and Cartage allowances, if any, can readily be determined for any particular item and it is important only that they receive proper consideration in determining the final selling price.

This leaves for further consideration the items enumerated under "General Overhead"—Profit, Inoperative Contingency and Reserve for Inoperative Departments. The proper application of these expenses in the determination of a selling price per pound or per ream, as the case may be, presents a somewhat complicated problem and several methods of solution present themselves.

Take, for example, the problem of profit. Basically a fair profit is a function of the investment, interpreted in the light of the risk involved in this business. It must not be overlooked, however, that this profit should properly "average out" over a period of years, and in determining the amount of profit to be asked on any one sale, or made in any one month, the instability of this business must be recognized. A study of Mr. Naylor's charts shows that orders are very likely to be either a feast or a famine, and the feast must furnish the fat to carry us through the winter of famine. The same argument applies to overhead expenses which run on regardless of manufacturing schedules. Of course, these remarks are of interest only to those of us who are so unfortunate as to be short of orders at times, and do not apply to manufacturers who during the last five years have never had occasion to shut down a machine for lack of orders and who feel confident that the same enviable record can be maintained during the next five years. Many of us, however, know by experience that there are contingencies against which it is advisable that reserves be provided, and this provision can be made only by gettng a price which will cover them during those periods in which there is a market for paper. Personally I am persuaded that the several such contingencies enumerated in Exhibit No. 3 are worthy of consideration every time the establishment of a seling price is contemplated.

EXHIBIT NO 3

SUGGESTED SCHEDULE OF ITEMS TO BE INCLUDED
IN
SELLING PRICE ESTIMATE

NET MANUFACTURING COST

(A) MATERIAL COSTS. To be priced at cost or market, whichever may be the higher

(1) Raw Materials
(2) Process Supplies
(3) Conversion Supplies

(B) CONVERSION EXPENSE. On prevailing or anticipated basis, whichever may be the higher

(1) Labor
(2) Mill Overhead
(3) Depreciation

COST ABOVE NET MANUFACTURING COST

(1) Packing and Shipping Expense
(2) Reserve for Adjustments on Sales--Returns and Allowances
(3) General Overhead Items
    (a) Selling Expense
    (b) General Administrative Expense
    (c) Income Charges--Interest on Borrowed Money, etc etc
(4) Profit--Interest on Investment
(5) Inoperative Contingency
(6) Reserve for Inoperative Departments
(7) Cash Discount, if any
(8) Freight and Cartage Allowance, if any

There are at least four principles which may be followed in the establishment of a selling price, though these give no recognition to the method under which Mr. Beckett tells me he successfully managed his business long years ago; namely, to double the price of rags and add two cents a pound for luck. May I enumerate:

First: A manufacturer may blindly follow the "market," and trust that his competitors know more about the cost than he does. It has the merit of vieing in simplicity with the method reported by Mr. Beckett as in vogue long years ago.

Second: A profit of some arbitrary percentage of the cost or selling price may be assumed to yield the desired results, and be applied indiscriminately to all products manufactured.

Third: A profit of some arbitrary number of cents per pound is sometimes advocated as being adequate.

Fourth: Finally, and I trust I have worked up my theme to a climax, a certain amount may be determined as necessary income per machine hour in order to meet these overhead expense items, reserves, contingencies and profit, and the increment above manufacturing cost for any particular item calculated on this basis.

The first of the suggested methods can scarcely be considered worthy of serious discussion. The relative results obtained under the second, third, and fourth methods are shown on Exhibit No. 4 and seem to point conclusively to the superior merit of the machine hour method of estimating selling prices, since it appears to be the only method that assures an equitable profit on all items under the diverse manufacturing conditions met with in the paper mill.

Personally, I cannot but feel that the field of greatest usefulness for the Cost Association lies in the direction of a closer study of the application of cost accounting to the estimating of selling prices. Our friends, the paper merchants, have come to a realization of the benefit to be derived from uniform cost accounting methods. If we, as manufacturers, could decide upon some uniform practice applying to the fundamentals of cost and accounting work, such, for example, as a uniform method of applying our overhead costs in estimating selling prices as illustrated in Exhibit No. 4, we would take a long step towards eliminating unfair and irresponsible competition which at times so seriously impairs the stability of our markets. For the manufacturers who are impressed with the possibilities of progress in this direction the Cost Association of the Paper Industry seems to furnish precisely the medium through which this problem can be most effectively solved, and if the Cost Association can make any substantial contribution to the progress in this direction its existence and continuance will be amply justified.

EXHIBIT NO. 4

COMPARATIVE SELLING PRICE ESTIMATES

Operating Basis: 500 Productive Machine Hours per Month.

	Basis of General Overhead and Profit charged to individual item per		
	Machine Hour $20.00	Mfg. Cost 80% Sales Price	4¢ per Pound
Item No. 1			
Manufacturing Cost	16.00	16.00	16.00
Net Production per Machine Hour	500#	500#	500#
Sales Price	20.00	20.00	20.00
Gross Profit per Month	10,000.00	10,000.00	10,000.00
Item No. 2			
Manufacturing Cost	16.00	16.00	16.00
Net Production per Machine Hour	400#	400#	400#
Sales Price	21.00	20.00	20.00
Gross Profit per Machine Hour	20.00	16.00	16.00
Gross Profit per Month	10,000 00	8,000 00	8,000 00
Item No. 3			
Manufacturing Cost	16.00	16.00	16.00
Net Production per Machine Hour	600#	600#	600#
Sales Price	19 33	20 00	20.00
Gross Profit per Machine Hour	20 00	24 00	24.00
Gross Profit per Month	10,000 00	12,000.00	12,000.00
Item No. 4			
Manufacturing Cost	12.00	12.00	12.00
Net Production per Machine Hour	500#	500#	500#
Sales Price	16.00	15.00	16.00
Gross Profit per Machine Hour	20.00	15.00	20.00
Gross Profit per month	10,000 00	7,500 00	10,000.00
Item No. 5			
Manufacturing Cost	20.00	20.00	20.00
Net Production per Machine Hour	500#	500#	500#
Sales Price	24.00	25.00	24.00
Gross Profit per Machine Hour	20.00	25.00	20.00
Gross Profit per Month	10,000.00	12,500.00	10,000.00

THE AMERICAN PAPER AND PULP ASSOCIATION CONVENTION.

Eleven hundred paper manufacturers, representing twenty branches of the industry, attended the forty-fourth annual convention of the American Paper and Pulp Association, April 11 to 16, at the Waldorf-Astoria Hotel, New York City.

A report, read by the joint committee on Education for the technical branches of American and Canadian associations on the opening day, recommended vocational training for employes in the industry. With the report were submitted two complete volumes of a proposed series of five, prepared to serve in furthering education among workers in the industry. It entailed two years' work at an expenditure of $30,000 by the associations, While three volumes which are well under have yet to be completed, a definite educational programme is being arranged and the association is now prepared to go ahead with it. The report was accompanied by a detailed survey of the industry made to determine the lines of promotion within the industry. As a guide to what higher job workers should be trained in order to win quicker advancement, this survey classifies every type of man and woman employee in a paper mill, the requirements, duties, equipment and line of promotion. It was made by J. G. Wright, assistant director for industrial education of the Federal Board for Vocational Education In this report, Mr. Wright said that men and women should be prevented by education from becoming mere automatic machines. They should be taught to use their mental equipment. The survey reveals that a large number of occupations must be regarded as relatively low in skill. The same survey indicates that opportunities do exist for promotion of the better workers to jobs of greater responsibility.

L. M. Alexander, of Port Edwards, Wis., chairman of the industrial relations committee of the American Paper and Pulp Association, announced that not far from one-half of the manufacturing plants in the paper industry "do not have and never have had any disturbances in their internal industrial relations." When difficulties have arisen, Mr. Alexander says that the fact a plant was being operated as a closed or open shop seems to have made little difference. He is endeavoring to develop a plan which will result in eliminating labor troubles from the paper industry. Mr. Alexander's opinions are based on a survey he has made of labor conditions in paper mills.

The Paper Maker's Advertising Club and the Tissue Paper Manufacturers Association met Tuesday at the Waldorf. At the session of the latter, resolutions were adopted condemning exorbitant charges by retailers of paper products. It was charged that some retailers are asking two cents a sheet for paper that costs them $1 for 500 sheets. The manufacturer has no remedy against these practices, it was said, although he must accept the blame.

Dr. Hugh P. Baker, secretary of the association, made it known for the first time that paper manufacturers were helping to finance the experimental work of the United Forest Products Laboratory at Madison, Wis. An annual saving of $1,000,000, through the prevention of waste due to decay in wood pulp, has been achieved by experiments at the laboratory conducted with the aid of Western paper mills, Dr. Baker reported.

Harrington Emerson, speaking before the salesmen's association of the paper industry in the Waldorf-Astoria Tuesday, termed payment of extra wages for overtime work "one of the most flagrant of all senseless practices". Mr. Emerson was explaining some of the "fundamentals of efficiency". "Either the worker has not yet been working during the normal day," he said, "and has been cheating his employer, or the employer has not supervised him properly, and he is fresh as a daisy at the end of the standard day, or the worker has worked honestly and energetically, and is unfit to continue."

The American Paper and Pulp Association's chief business session was held Thursday at the Waldorf. President George W. Sisson, in his opening address, devoted considerable attention to the interference of Government and politics in industry, the question of relations with Canada as to the importation of pulp wood and the labor situation. The proposed embargo on the export from Canada of pulp wood for American mills is fostered, he said, by persons and interests striving to serve personal ends, and who have little regard for the situation in its broad international aspects. He said the United States is Canada's best market for raw and manufactured products and that if the pulpwood question is taken out of politics and divorced from the influence of selfish promotion interests it could be quickly adjusted by the practical men in the industry. "The Underwood resolution providing for the orderly and amicable discussion of these matters with Canada failed to receive the signature of President Wilson," said Mr. Sisson, "but will be introduced at the present session of Congress, and will, we believe, result in some action. Mr. Sisson denied that the open shop movement was in any sense a conspiracy of employers.

Philip T. Dodge, president of the International Paper Company, made it plain that the employes of the paper mills would have to accept wage reductions, with the alternative of seeing the mills shut down. Mr. Dodge described the paper situation as critical, in view of the shortage of raw materials and the cancellation of orders by many publishers. He said there had been a marked tendency to cut orders in the hope that price reductions would follow. He asserted that the mills had supplies on hand that would run them until the end of May.

United States Senator Medill McCormick was the principal speaker at the annual dinner at the Waldorf-Astoria Thursday night, which was attended by nearly 1,100 members of the association and friends. Senator McCormick painted a gloomy picture of conditions in Europe. Among the principal affections he mentioned the disappearance of silver, the blight of unemployment and the continued new issues of unsecured paper money. He spoke of the improbability that communism would succeed in Western Europe.

Election of officers in the association for the ensuing year resulted in the following selections: President, W. J. Raybold, B. D. Rising Co., Housatonic, Mass.; Vice-Presidents, (Eastern), Henry W. Stokes, York Haven Paper Co., Philadelphia, and (Western) Arthur L. Pratt, King Paper Company, Kalamazoo, Mich.; Executive Committee at Large, Col. W. E. Haskell, International Paper Co., New York; Louis Block, Crown-Willamette Paper Co., San Francisco, and W. R. Shafer, New Haven Pulp Board Co., New Haven, Conn.

Transactions of the Technical Section

INVESTIGATION INTO SPECIAL BRONZES.

(Continued from last issue.)

This article was translated from the Italian for the Committee on Mechanical Standards of the Technical Section. Many readers will find it very technical and perhaps uninteresting. It is published in full in support of the committee's effort to make a really valuable contribution on bronze alloys available to those who make as well as to those who use them. Under this heading, "Thansactions of the Technical Section", the Pulp and Paper Magazine hopes, through committee reports, contributed papers, and discussions, to provide the membership with an open forum for assisting the work of the Technical Section.

Some articles will be kept in type for two weeks after the last installment for correction and discussion and will then be reprinted for distribution to members. —J. N. Stephenson, Chairman, Committee on Publications.

In Table 2 we give the results of the determination of the cooling curves of 26 ternary alloys of copper, tin and lead, whose compositions were selected (as we shall see further on) so as to allow the establishing with sufficient accuracy of the course of the critical surfaces in the portion of the equilibrium diagram of the alloys examined by us.

On the basis of the data contained in the preceding table and represented geometrically in the usual manner (the compositions of the alloy by the interior points of an equilateral triangle; and the temperatures by altitudes proportional thereto, taken on the perpendiculars to the plane of the triangle passing through the points representing the corresponding composition), we constructed the equilibrium diagram of the ternary alloys examined; this diagram is shown in Fig. 2.

This figure naturally shows only part of the complete diagram of the ternary alloys of copper, lead and tin: and especially the part overlying the portion of the base triangle comprised between the two sides corresponding to the binary alloys Cu-Sn and Cu-Pb (sides issuing from the vertex of the triangle corresponding to 100 p.c. copper) and two straight lines the first one of which—parallel to the first side (corresponding to the alloys CuSn)—passes through the point of the second side (of the CuPb alloys) to which corresponds 20 p.c. lead: while the second (parallel to the second side) passes through the point (on the first side) which corresponds to 24 p.c. tin.

From the five superposed critical surfaces, which result from combining the critical point of each of the five series given in our table, it is seen at once that the last three are only horizontal planes at distances from the base corresponding to temperatures of 770 deg., 500 deg. and 319 deg. respectively.

To render possible the referring of the diagram of ternary alloys to the single diagrams of the two series of binary alloys (Cu-Sn and Cu-Pb), we have drawn (in perspective) on the two faces of the dihedral angle (Fig. 2) the portions which interest us in the two diagrams of the binary alloys: on the anterior face the one of the copper-tin alloys (ANZSQROP) with respect to the orthogonal axes AB and VC and limited at the alloys containing less than 30 p.c. tin; on the posterior face the one pertaining to copper-lead alloys (AHILVD) with reference to the orthogonal axes AB and VD and ending at the alloys containing less than 40 p.c. lead.

The surface which in Fig. 2 is bounded by line AEFGH is the locus of the points at which there begins the crystallization of every molten mass whose composition may be represented by a point that falls inside the polygon formed by the orthogonal projection of the above indicated line upon the base of the model. The continuity of this surface, the fact that it connects without deformation with curve AE, along which there separates from the binary alloys of copper and tin the solid solution a (copper-tin)[8], the fact that this surface has approximately the shape of a cylinder generated by lines parallel to AH, passing through the directrix AE; and, still more, the

Table II.

No. of sample	Proportions of metals used (per 100 parts of alloy): Sn	Pb	Results of the analyses made at various points of the regulars: Position of sample taken	Sn	Pb	I Critical Point beginning	II Critical Point beginning
1	4	1	homogeneous composition	4,1	0,95	—	—
2	8	1	"	8,1	1.12	1015°	—
3	14	1	"	14,1	1,15	959°	—
4	4	3	"	3,9	3.0	1039°	—
5	8	3	"	7,8	3.2	1002°	—
6	14	3	"	13.9	3.1	939°	—
7	4	5	"	3,99	5.0	1028°	860°
8	8	5	"	8,0	5.0	988°	850°
9	11	5	not analyzed	—	—	963°	836°
10	14	6	homogeneous comp.	13.76	5.1	928°	822°
11	17	5	not analyzed	—	—	883°	805°
12	20	5	homogeneous comp.	19,8	5.0	835°	785°
13	24	8	not analysed	—	—	—	—
14	4	7	homogeneous comp.	4,0	6.9	1012°	880°
15	8	7	"	8,0	6.9	978°	862°
16	14	7	"	13,	7.0	905°	830°
17	4	10	"	2.4	10.6	1008°	908°
18	8	10	"	8,0	10.4	966°	878°
19	14	10	"	13.85	10.4	889°	845°
20	20	10	Top bottom	20,6 20,2	7.75 8.81	800°	---
21	4	15	top bottom	4,1 4,1	14,13 15,26	979°	900°
22	9	16	top bottom	9,4 9,1	15,3 17.18	920°	887°
23	14	15	top bottom	13,9 13,6	13.09 15.28	859°	812°
24	20	8	top bottom	21,9 21.2	6.46 8,05	780°	----
25	5	20	not analyzed	--	--	950°	910°
25	12	20	"	--	--	868°	----

No.	III Critical Point (lag): Temp.	duration of lag in minutes	IV Critical Point (lag): Temp.	duration in minn.	V Critical Point (lag): Temp.	duration in min.	Remarks
1	---	---	---	—	----	----	No. 1. To compensate for the losses of lead due to volatilization in all the alloys (except the first), we added 1 gram of lead over and above the quantity required for obtaining the desired composition.
2	769°	1'	---	—	----	----	
3	772°	3'	---	—	----	----	
4	---	--	---	—	----	----	
5	---	---	---	—	----	----	
6	765°	3'	500°	very short	----	----	
7	---	--	---	—	----	----	

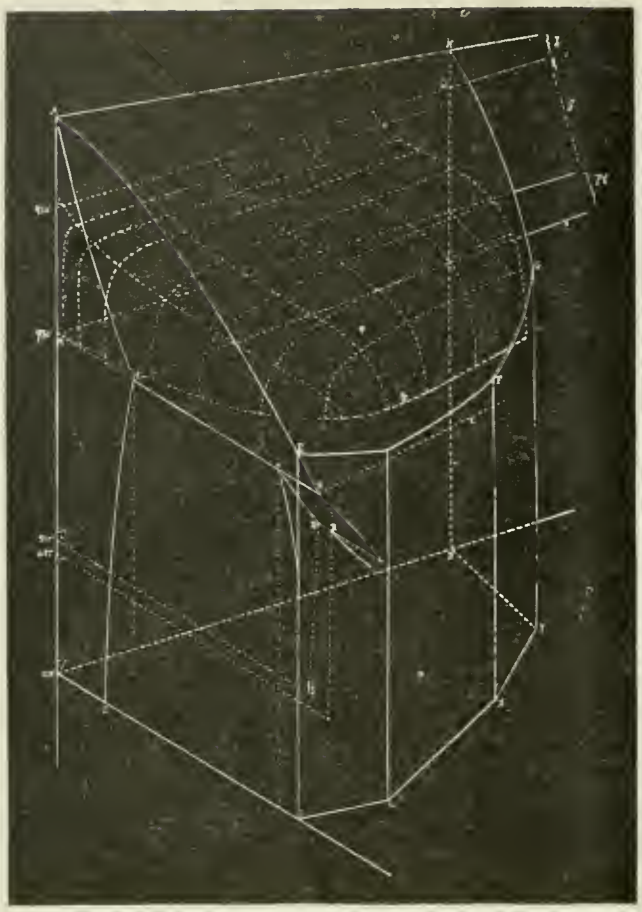


Fig. 2.

microscopic examination of the alloys in question (see further on), prove that the mixed crystals formed along this surface are simply mixed binary crystals of copper and tin, and particularly the crystals designated as "solid solution *a*" in the series of the constituents of the binary alloys of copper and tin.

The representative point of a given fused alloy (whose composition is comprised within the above indicated limits) moves from the top downwards—during the cooling—at first along a vertical passing through the point in the base which corresponds to the composition of the alloy in question. But when the point has reached the first critical surface (AEFGH) and there begin to separate from the molten mass the mixed crystals of copper and tin (*a* crystals), the composition of the liquid residue begins to vary and that is exactly in the sense in which the concentration of the tin and lead increases therein. In fact, it is known already that on the one hand the mixed crystals, *a*, are much poorer in tin than the molten masses with which they are in equilibrium at various temperatures; and, on the other hand, we shall prove in the most evident manner that the mixed crystals themselves which separate from the ternary alloys copper-tin-lead along the surface AEFGH do not contain any lead; so that this metal, too, increases in concentration in the liquid residue simultaneously with the crystallization. This being established, it is obvious that our representative point will have to move on the surface AEFGH along a line which diverges either from line AH or from line AE, We do not have at present any data to establish with accuracy for all cases the course of such a line; but owing to the fact that during the crystallization a little tin solidifies together with the copper (in the state of solid solution) while the entire lead remains in the liquid state, we can prove that our crystallization line will fall entirely within the dihedral angle formed by plane AHIL (of the copper-lead alloys) and the plane passing through the edge AB of the diagram and through the vertical which started the motion of the representative point. If the copper would also separate from the tin, the crystallization line would be nothing else but the intersection of the second plane just defined with surface AEFGH.

The course of the representative point, which is along the first critical surface, corresponds, on the cooling curves, to the interval comprised between the first and second critical point (I and II on Table 2).

The significance of the second critical point, whose values for the alloys of different composition (column II of the table) taken by themselves generate the second critical surface of the diagram (LPO in Fig. 2), cannot be in doubt. It is sufficient to note that the above mentioned surface connects continuously with the straight line LOI of the diagram of the binary lead and copper alloys: whose points correspond to the temperatures at which takes place the separating of the liquid residue into two distinct saturated solutions for each of the alloys containing less than 40 p.c. lead (see above). And in fact as the representative point for binary copper-lead alloys moves along AHI until it meets (in I) the curve which defines the miscibility lacuna of the two metals in the liquid state, so does the representative point of the ternary alloys under consideration move along the surface AEFGH, along the line just mentioned, until it meets the surface enclosing the space in which the miscibility of the three metals in the liquid state is incomplete and from this point onward — which is shown by a bend (second critical point) in the cooling curves — it will continue to move along the intersection of surface AEFGH with the surface of incomplete miscibility[9] while the liquid residue will split up into two layers, segregating a second fused mixture (at the side of the first, whose composition varies along the line of intersection of the two just mentioned surfaces) in proportion as new amounts of mixed binary *a* crystals continue to crystallize. This at once explains why the second critical points which for the binary copper-lead alloys (points of straight line LOI) appear like breaks in the cooling curves, appear instead like plain bends in the cooling curves of the ternary alloys (points on the surface LOI). In fact, whereas in the binary lead-copper alloys the separation curve of copper (AHI) meets the curve which bounds the region of incomplete miscibility in the liquid state at point I, at which the ulterior separation of the solid copper goes on isothermically pari passu with the formation of the second liquid mixture (corresponding) to point E in the diagram of the binary alloys CuPb (Fig. 1), in the ternary alloys the surface of incipient crystallization intersects the limiting surface of incomplete miscibility in the liquid state along a curve. Hence the second critical points of our ternary alloys do not represent anything but the passage of the representative points of the various alloys from the free motion on surface AEFGH to the motion along the above indicated curve: so that in the cooling curve of the ternary alloys these points would correspond to simple changes of direction ("elbows") due to the difference between the amount of heat evolved in the plain crystallization of the binary solution *a* along the surface AEFGH and that evolved when to this crystallization is added the segregation of the second saturated liquid mixture.

The concentration of the tin in the solid solution which separates during the above indicated processes — at first along the surface AEFGH and then along the latter's intersection with the surface of incomplete miscibility — increases gradually with the advancement of the crystallization so that the portions of the *a* solution which crystallize continuously are in concentration equilibrium with the liquid residue at the crystallization temperature. It is known that the binary alloys of copper and tin interrupt the continuity of this process when the temperature has reached a value of about 770-780 degrees, owing to the fact that the mixed crystals which at this temperature are in concentration equilibrium with the liquid residue are saturated; so that at this point they begin to react with the liquid residue, being transformed into the second β solution, and this last until the liquid residue is exhausted — if the total concentration of the tin was lower than that of the solid β solution (about 22 p.c.) — or until the exhaustion of the mixed *a* crystals — if this concentration was above 22 p.c. It is clear therefore — and we shall see that the microscopic examination corroborates it fully — that such is the phenomenon that even in our ternary alloys it gives rise to the lag found at 770 deg. C. in the cooling curves. Then the facts that the transformation accomplished at 770 deg. in all our ternary alloys takes place isothermatically ("lag" in cooling) and always occurs at the same temperature (within the limits of experimental errors) for all the alloys comprised in a certain region, independently of their composition, constitutes the most evident proof that the mixed *a* crystals which separate along the surface AEFGH from the ternary alloys do not contain any lead.

This enables us to find the third critical surface (formed by the points of column 9 in table II and having the shape, at least so far as our studies show, of a horizontal plane) is bounded on one side by the intersection with the plane of the binary copper-tin alloys, and on the other by the intersection with the vertical plane which joins the point N (saturation point of the mixed *a* crystals in the binary copper-tin alloys) with the vertical bend corresponding to pure lead in the ternary alloys. In fact, it is clear that — since the mixed crystals which separate from the ternary alloys do not contain any lead — their composition at the saturation point is independent of the lead content of the ternary alloy from which they separate, and must therefore be represented in the diagram of these alloys by the points corresponding to a ratio between the concentration of the copper and tin which is constant and equal to that of point N: now these points are exactly on the above indicated horizontal, joining N to the vertex corresponding to pure lead.

This conclusion is completely corroborated by the course of the surface of the duration of the conversion at 770 deg., which can be easily drawn on the basis of the data contained in column 10 of table II. This surface intersects — as is clearly seen in Fig. 3[10] — the horizontal through N exactly along the above defined line issuing from N (line AB in Fig. 3). So that, reversing the reasoning, the latter fact forms the third corroboration of the absence of lead in the mixed *a* crystals which separate out from the ternary alloys.

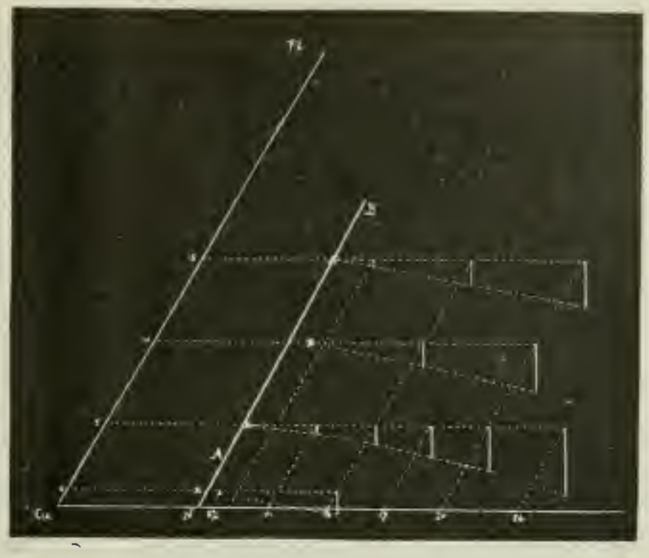


Fig. 3.

This being established and turning our attention to the movement of the representative point of the various alloys during cooling (a movement which we followed up along the surface AEFGH and along the intersection curve — which for brevity's sake we shall call d — of the surface itself with the surface of incomplete miscibility of the three metals in the liquid state), we see that this movement will undergo a lag at the temperature at which the curve drawn from the representative point along the surface of incipient crystallization (AEFGH) will intersect the horizontal surface passing through N: viz. at a temperature of 770 deg. C. This break due, as we have seen, to the isothermic conversion undergone by the binary *a* crystals at that temperature, reacting with the liquid residue in order to be transformed into mixed crystals of the β series — will naturally take place only in those alloys in which the mixed *a* crystals which separate out can reach the saturation limit (N); or in those ternary alloys whose composition is represented by points located to the right (looking at the diagram of Fig. 2) of line N A whose position we have defined above. This is fully corroborated by the examination of the numbers in column 9, table II.

Having thus established the significance of the first three critical surfaces of our ternary alloys, let us see what deductions can be drawn from our observations with regard to the shape of these surfaces and their mutual relations. It is easy to recognize at once how the movement of the representative point of the alloys comprised in the field AEFGH during the cooling can take place in two quite different manners according to the initial composition of the alloy examined. We know in fact that the crystallization surface of the solid solution (AEFGH and prolongation) intersects on one side the surface of formation of the solid β solution (horizontal plane through N) along some distance of the curve starting at P, locus of the points analogous to point P itself (we shall indicate this curve by e); and intersects on the other side the surface bounding the field of incomplete miscibility of the three metals in the liquid state along a curve (which we called *d* without drawing it in the figure) starting at point I and forming the locus of the points analogous to point I itself. The two curves thus generated intersect in a point which we shall call *r* (not shown in the figure).

This being established, it is evident that in the movement of the representative point along the surface of incipient crystallization (AEFGH) two distinct cases may arise according as the curve (the course taken by this curve has already been discussed above) along which the point moves intersects one or the other of the two above defined curves (*e* and *d*).

In the first case, when the representative point in its movement along the surface AEFGH will have met the intersecting curve of the surface itself with the third critical surface (horizontal plane through N), the mixed α crystals will begin to react with the liquid residue, absorbing its tin to transform itself into mixed β crystals (with a reaction analogous to that taking place at P for binary bronzes), and our representative point will continue its movement (at constant temperature because always on the horizontal plane through N) along curve E starting at P; until it has reached the point (called *r* above) at which point curve *e* intersects curve *d* (starting at I) defined above. The point *r* is — by its very definition — a quadruple point, at which the representative point stops until the entire completion of the characteristic reactions (already indicated) of the two curves *e* and *d*; and particularly of the formation of mixed β crystals from the reaction of the α crystals with the liquid residue by curve *e*; and of the segregation of the second liquid mixture rich in lead, by curve *d*. It is therefore evident that the cooling curves of the alloys for belonging to the first case will not show the bend corresponding to the points of the second critical surface (meeting of the crystallization curve with curve *d*), but a single lag at 770 deg. corresponding at the same time to the movement of the representative point along the isothermal and to its termination point *w*.

In the second case, on the contrary, there will begin first the segregation of the second liquid mixture rich in lead, beginning from the point at which the curve along which the representative point moves on the surface AEFGH intersects curve (starting at I); then beyond this point — corresponding to the second elbow of the cooling curve — the crystallization (accompanied by the above indicated segregation) will proceed along curve *d* until at point *w* (third critical point) there will take place simultaneously isothermatically — as in the first case — the two characteristic reactions of the two curves *d* and *e*.

It is quite clear why hitherto we did not possess sufficient data to determine "a priori" which of the ternary alloys belong to the first and which to the second of the cases analyzed by us; and this is because — as we have said already — there are no available data for determining a priori for each of these alloys the course of the curve of crystallization along the first critical surface.

We have, instead, a quite simple experimental criterion for deciding the question. It is sufficient to remark that as we have said earlier that all the alloys for which the crystallization takes place in the same manner show in their cooling curve the bend corresponding to the second critical surface; whereas such a bend does not appear for all those that crystallize according to the first case. Referring to our diagram, the alloys for which the crystallization takes place in the second manner are those whose composition is comprised within the region bounded by the straight line of the binary copper-lead alloys and by the projection upon the base triangle, by the intersection of the second critical surface with the third. The general course of the second critical surface which results from our experimental data enables us to determine to some degree of accuracy[11] its intersection with the third critical surface (horizontal plane through N) for the alloys containing more than 7-8 p.c. lead. Such a course of intersection we have indicated in Fig. 2 by the heavier line θ.

(To be continued.)

ECHOES OF NEWSPRINT CONTROL.

By a Staff Correspondent.

Two echoes of newsprint control were heard in Parliament this last week. In the first place, the report of the Auditor General, which was tabled in Parliament, disclosed the interesting fact that newsprint control cost the people of Canada, during the fiscal year 1919-1920, $48,814·53.

Another interesting phase of the newsprint control question emerged, by way of question and answer, in the House of Commons last Thursday. The Hon. W. C. Mackenzie King, the leader of the Opposition, asked the Premier if the Government had received any representations from newspaper publishers on the Pacific Coast as to the difficulty of obtaining newsprint paper, on account of an alleged combine among the paper manufacturers; and, if so, what steps were being taken by the Government to afford the necessary question emerged, by way of question and answer, relief. To this question, the Premier, the Rt. Hon. Arthur Meighen replied that if he remembered correctly, he had received these telegrams from Mr. Cromie, of the Vancouver Sun, complaining that the price sharged him for newsprint paper was too high, but containing nothing to indicate that there was anything in the nature of a combie, although it was indirectly alleged. He added that the telegrams made out no case for an action on the part of the Government.

With regard to this matter, thus ventilated in Parliament, your correspondent was informed, at the office of the Canadian Pulp and Paper Association that the only question involved is a dispute between certain Western manufacturers and the Vancouver Sun. The dispute arises from the fact that the Vancouver Sun has, so far, refused to accept a contract on the same basis as the other Vancouver newspapers, that is to say, on the basis of agreeing to pay $5.50 per cwt. from April to December inclusive. One does not gather that any discrimination against the Vancouver Sun, in the matter of price, is alleged, or that any such allegation, if made, could be sustained.

However, one sometimes doubt whether all newspapers sufficiently realize that the period of newsprint control, with its heavy cost to the people of Canada, has terminated. It would be regrettable if any newspaper concerns were to get into their minds the idea that they are still entitled to preferential treatment in the matter of the price of newsprint or any other commodity.

The funniest sight we saw at the convention was a man smacking his lips after a drink—of water!

British Trade News

(From OUR LONDON CORRESPONDENT.)

London, April 4, 1921.

Serious Coal Miners Strike Dislocates Industry.

We are in the throes of a great strike, all the miners having left the coal mines throughout the United Kingdom and industry is being run on existing stocks. In my notes last week I mentioned that 21 mills, out of 500 paper mills, had adopted electrification and it will be readily seen the effect the present labor crisis in coal mining will have on producers of paper. Fortunately the strike has not occurred at a time when all mills are working at high pressure. That is one consolation; but the export trade has to be considered and present stocks of coal will help to run this section of industry if the railroad men do not join the miners as they have a tendency to do at the moment. The railroad men are having their bonus reduced owing to the cost of living falling, but they say too much is being taken off them—one shilling a week too much, equal to 24 cents—and the companies say "No." If things are not soon patched up the rail men will join the miners, and then things in the country will be at a standstill. The dispute between the coal miners and the owners is roughly as follows:—

(1) The men want a National Settlement; (a) 10 p.c. minimum profits; (b) National profits pool; (c) "War Wage" when prevented from working; (d) District variations according to past percentage additions.

(2) The owners want District Settlement; (a) 17½ p.c. minimum profits; (b) no pool; (c) no such payments; (d) percentages converted into flat rate addition to standard wage.

Both sides agree on (a) Standard Wage; (b) Standard profits; (c) Division of any surplus; (d) Wages based on what the industry will bear.

Who Would Be a British Papermaker?

It is to be hoped Canada will never see, or experience, the troubles a British manufacturer has to go through. The British paper mill owner has a bigger fight for his existence than any other paper mill owner in the world. If he could get on with his own business he would be a happy man: but he cannot, and outside influence wont let him. He is constantly up against some foreign element which is trying to eat into financial resources or hamper him directly and indirectly. Here has been his life since 1914:—

(1) War breaks out. His raw materials are partly cut off and subsequently he loses his labor in the mill. Export trade—dead.

(2) The Controller makes his appearance, with other Controllers.

(3) Between 1918 and 1919 coal and railway strikes and labor troubles.

(4) 1920—Higher Income Tax and Excess Profits Duty, along with other Taxes—not to mention higher assessments.

(5) 1921—Another coal strike, slump in trade, and labor expecting the same high wages as were paid in 1919.

(6) Foreign paper mills underselling the British papermaker in his own market. Result: Attention given to Export trade.

(7) Papermakers told: Drop your old ideas; you must become a Scientific paper maker in 1921.

(8) The old hand-made paper mills in England working full time, with plenty of orders, in 1921—while machine mills are closed, or running short time.

The British papermaker is not "out of the wood" yet and he fully realizes it. It is very fortunate for him that his relations existing today between him and his workers are of the best and it is hoped the present coal crisis will not last long as there are signs of business in paper brightening up a little, if one may judge by the enquiries floating about. To give Canadians an idea of what things are like in the United Kingdom today, taking the miners, unemployment in the paper and textile and other industries, over 3,000,000 workers are idle. Labor is fighting capital, and, of course, where there is unemployment one may rest assured the paper and pulp industries receive a set back.

Paper and Pulp Situation.

We have just got over the Easter holidays and in a way they proved a blessing. They gave mill owners the opportunity of closing down all departments for an extended period, according to the orders they had on hand. Some mills were not reopened for a week or ten days. Many of the mills are now running short time and in cases where heavy stocks are existing substantial reductions are being made to secure a clearance—a policy which is deprecated in some quarters, as it is contended that the present depression in paper cannot go on much longer. Let us hope it cannot as the pulp men want to get busy. The outlook, however, for paper is not cheerful. One must go further afield and look at other industries and see how they stand. Other industries are in the same position as the British paper industry and until they show a revival no revival can be expected in paper or pulp.

A writer in the "Newspaper World"—a weekly paper for Journalists and newspaper men—makes the following comments on Canada:—"Until Canadian pulp mills are in such a position that they can meet all the requirements of our papermaking industry, we shall continue to be at the mercy of Scandinavian and other Continental pulp makers. Nine-tenths of all the paper made in this country is made from imported raw materials, of which by far the greater portion comes from Scandinavia, but Norway and Sweden are both big papermaking, as well as pulpmaking countries, and when it suits their convenience they will sell the manufactured paper at about the same price as they quote for the pulp. For several years past their manufacturers have grown immensely rich by exploiting this and other countries and during 1919 and 1920 the exhorbitant prices they charged for pulp did more than anything else to cause the high selling price of paper with us. Present quotations for pulp are considerably lower than they were and with genuine competition from Canada may go lower."

There is no doubt about the importations of paper and pulp from Canada to the British market upsetting the calculations of Scandinavians. It is always pleasant news to them to hear of the Canadians output of wood pulp going to the States, because they get a free hand in England. British newsprint is selling to-day at 8 cents and Scandinavians are booking orders, along with other Continental mills, at 6 cents. Newspaper proprietors, who get through several tons in a week, naturally go in for the cheap material. They have been crying out against paper prices since the war started and they will not listen to facts.

The most curious element in the whole discussion is that newspaper proprietors are crying out themselves against the increased cost of production. Paper is only one item they complain of and they think the price to-day should be the same as it was in 1914. They have no conception of the price of pulp or chemicals, and they imagine that pulps should be produced at the same cost as they were in pre-war days. These fallacious ideas drive the British papermaker into a state of disgust because he is being asked to do what the newspaper proprietor cannot do himself and that is to reduce the cost of production.

Another element telling against the papermaker is the high priced contracts he had to enter into for pulps. Scandinavians and papermakers in England are now trying to find a way out of the difficulty. Negotiations are in progress and the pulpmen are doing all in their power to meet the papermakers. Of course with old contracts at high prices, it is impossible to produce newsprint at 5, 6, or 7 cents a lb.

Pulp prices on current business—for the little that is doing—are unchanged.

Protection!

The German Reparation (Recovery) Act has been introduced by the Board of Trade. It is camouflaged Protection. Under section one of the Act those who import German goods pay to the British Customs a prescribed proportion of the value not exceeding 50 p.c. There are other clauses fixing the percentages payable and they may have some effect in stopping the 4 cent and 3½ cent a lb. newsprint that is being dumped into the country from "The Fatherland," where wages are low and the Mark at its lowest point.

London Technical Section.

A paper on "The Stationary Office and the Papermaker" by Mr. E. A. Dawe, of the Stationary Office —a Government Department—was read at the meeting of the London Technical Section of the Papermakers Association the other evening. The paper was merely an informative one for those who send in tenders for contracts to the Stationary Office. After the paper was read Major Marx gave a paper on "A new Tearing Test" and he demonstrated on an Elmendorf Tearing Tester. He reminded his audience that the modern papermaker must be a scientist.

PROGRESS OF THE NORWEGIAN PAPER INDUSTRY.

The rapid development of the paper industry in Norway is described by the Svensk Travaru-Tidning. In 1870 there were only five paper mills in the country; in 1900 there were fourteen, in 1909 twenty-eight, and in 1919 forty. Of the forty mills, five are united with both ground-wood and cellulose plants, eight have their own cellulose mills and six have established ground woodpulp branches. At present Norway has 90 paper machines. Output of paper has increased from 63,881 tons in 1903 to 211,500 tons in 1913. From 1913 to 1916 production rose about 30,000 tons annually. During the war the mills encountered a considerable measure of adversity and manufacture slumped. In the meantime exports have increased in corresponding ratio, since only about 15 per cent of the paper produced is consumed in Norway itself. In 1919 31,306 tons of newsprint were exported, of which 14,389 tons went to England, and 6,552 tons to France. In 1919 exports of thin printings amounted to 9,148 tons, exports of M.G. paper to 4,803 tons, and of woodfree writing and printing papers to 13,697 tons, chiefly to France and England. In 1920 exports have increased, in spite of German competition.—Finsk Pappers Och Industritidskrift, February 28, 1921.—P.B.

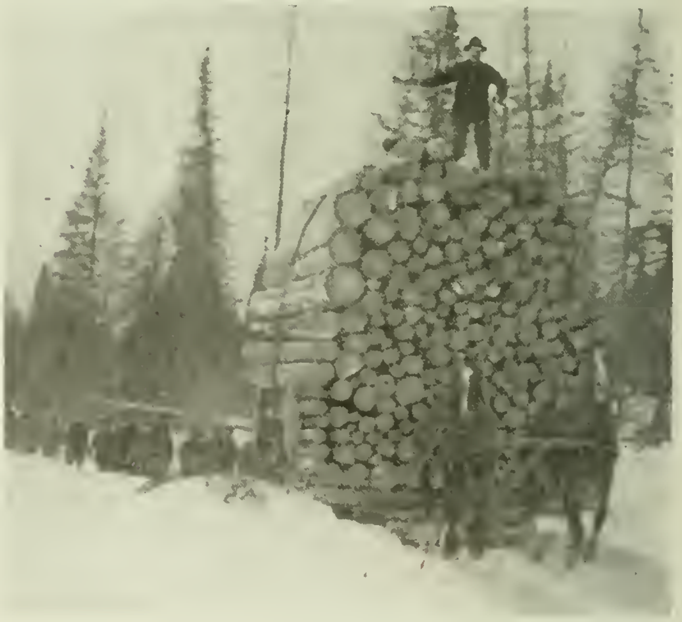
MUST CUT WAGES OR CLOSE MILLS.

The management of the Spanish River Pulp & Paper Mills, Ltd., has submitted a proposal through the union officials to all its mill employees in the Sault, Espanola and Sturgeon Falls respecting the renewal of the present agreements between the company and the unions, which expire on May 11, the chief provision of which is a general wage reduction of 30 per cent., which the men have been asked to accept.

The proposal further provides that the present eight-hour day in force among the regular day workers at the mills be increased to nine hours; that Sunday and overtime work, for which time and a half is now granted, be paid for on a straight scale, and that unskilled or common laborers now members of the union work on the open-shop principle, and be paid at rates prevalent in industry elsewhere.

C. H. L. Jones, manager of the Spanish River Mills, said that a readjustment of wages was necessary if the mills were to continue in operation. The present state of the paper-making industry was not so bright as it had been pictured, he stated, and only by a considerable lowering of the costs of production could the mills be kept running on full time and continue to produce paper at the prices prevalent. He said that for some time past the company had been making paper for stock in order to keep the works going even several days a week.

CAN YOU BEAT IT?



Here is a picture of what is claimed to be the biggest load of wood ever hauled by one team in Ontario. On February 19, 1921, Sam Larche at Camp 30 of the Abitibi Power and Paper Co. rode this load 2½ miles, driving his pet team. The picture proves the size of the load, which held 17 cords and weighed more than 33 tons. Note the procession of happy witnesses, also that there is a bit of up grade at this point. If anyone can beat this record send particulars and a picture

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In case anyone missed the joke in the last issue, the T.A.P.P.I. was spared from hearing the "remarks" used as an editorial last week—there was only time for the good speakers. Any way, we got it "off our chest."

The Strength of the Riordon Company, Limited

As everybody knows, the Riordon Company, Ltd. is one of the largest concerns of its kind in the world. Its Head Office is in Montreal, and its mills are situated at Hawkesbury, Ont., Merritton, Ont., Temiskaming, Que., Rockland, Ont., Ottawa, Ont., Calumet, Que., and Ticonderoga, N.Y. The Company was established some 63 years ago. For it was in the year 1857 that the late Mr. John Riordon commenced business in Brantford, Ont., as a trader in paper. In 1863 he formed a partnership with his brother, Mr. Charles Riordon, for the purpose of manufacturing wrapping paper at St. Catherines, Ont. The firm's output at the period was one and a half tons a day. That was the day of small things.

In 1867 the firm built at Merritton a mill which, in its day, was considered the finest and best equipped mill on this continent, with a daily capacity of ten tons of news and wrapping paper. A few years later, it started on the manufacture of groundwood pulp, being among the first on this continent to undertake this form of manufacture, newspaper previously having been made from straw and rags. In the year 1885, Mr. John Riordon died and Mr. Charles Riordon became the active head of the business, continuing in that capacity until last month.

In the succeeding year, Mr. Charles Riordon was, with the late Governor Russell, of Massachusetts, instrumental in bringing to this continent the sulphite pulp process, under patents of Dr. Kellner, of Vienna. Therefore the Riordon Company, Ltd., is not only one of the foremost producers, as well as one of the longest producers of pulp in Canada, and, in fact, on the continent, but it is also accorded premier place among the pulp experts of the North America paper trade and its sulphite has become recognized as a standard.

Taking the further operations of the Company in chronological order, the year 1898 saw the building of a sulphite pulp mill at Hawkesbury, Ont., with a capacity of 75 tons daily. To provide the necessary raw material, 600 square miles of the most valuable timber limits in the Province of Quebec, bordering the Rouge River, were purchased.

In 1910, the G. H. Perley Company was merged with the Riordon Company, giving the latter control of the major portion of the timber limits on the Rouge River. With this absorption a modern sawmill at Calumet, P.Q., was also acquired, with a daily capacity of 75,000 feet of lumber. This mill was destroyed by fire in 1911, but was immediately rebuilt in steel and concrete and equipped with the most modern sawing and handling machinery procurable, making possible an increase in the output to 125,000 feet daily.

Since 1913 the mill at Merritton has been completely rebuilt in steel and concrete, which, with the addition of an electrolytic chlorine plant and a bleaching plant, has increased the daily capacity to 40 tons of bleached sulphite. In the same year the Company discontinued to manufacture of paper, confining itself exclusively to manufacture of sulphite pulp of which its combined output now amounted to 250 tons a day.

From this time onward the Company extended and expanded with marvelous rapidity and steadiness. In 1916 it acquired yet another lumber property at Haileybury in Northern Ontario. At this plant the daily capacity is 30,000 feet of lumber and 200 cords of barked pulpwood, the latter being used at the Merritton mill.

Then, in 1918, the Kipawa plant was organized, for the purpose of producing the highest grade of bleached sulphite pulp by utilizing the natural resources of wood, water and power of the north county, and the Company obtained control of vast timber limits within easy reach of the mill, thus ensuing a permanent and adequate supply of pulpwood. The mill is located at the foot of Lake Temiskaming on a branch of the C. P. R. and is distant only 38½ miles from the main line. It should be added that the wood from this district—and there are upwards of 30,000 square miles of timber limits from which supplies can be obtained—is the best on the whole continent for the manufacture of pulp, having a superior fibre and yielding more pulp per cord than any other wood in Canada. The Kipawa plant is designed with the object of producing an ultimate daily output of 500 tons of bleached sulphite pulp. The first unit is in operation at present. The buildings are fireproof, the most modern labor-saving machinery has been installed and the mills so planned as to ensure production of the best bleached sulphite pulp at the lowest possible labor and maintenance cost. The machinery and equipment for this mill were ordered in 1916, when labor and material were much less expensive than they are to-day. Subsequent units will naturally cost much less, as the price of land and water rights for the full 500 tons capacity, are included in the present expenditure. An important factor in connection with this plant is that the water has been tested and found specially suitable for pulp making, and stone, for producing acid, is obtainable from nearby quarries. The company also possesses the advantage of being able to handle all its timber at a low cost from limits to mill, as in every instance this can be done by water routes.

Still the Company went on from strength to strength. Last year, a transaction that will probably always rank as one of the very biggest in the forest industries of Canada took place under which the great holdings and operations of W. C. Edwards & Company, Ltd., and Gilmour & Hughson, Ltd., were united with the holdings and operations of The Riordon Pulp & Paper Company, Ltd., Kipawa Company, Limited, and Ticonderoga Pulp and Paper Company, in a new company, RIORDON COMPANY, LIMITED, the management and control of which remain as in The Riordon Pulp & Paper Co., Ltd. As a result of this combination the Company own, or control by lease, in its own right or through its Subsidiaries, the areas of timber and pulpwood lands tabulated below. The greater portion of these properties are located in Quebec Province on the watersheds of the rivers mentioned, all of which empty into the Ottawa River or its tributaries:—

Watershed	Area Square Miles
Gatineau River	6,290
Quinze River	1,400
Rouge River	1,300
Nation and Blanche Rivers	560
Lower Ottawa River	352
Black and Dumoine Rivers	280
Coulonge River	256
Kipawa River	152
Total	10,590

These immense tracts of timber land—estimated to contain not less than 25,000,000 cords of pulpwood and

(Continued on page 438.)

PULP AND PAPER NEWS

The Rolland Paper Company have recently been making considerable improvements to their mills both at Mont Rolland and at St. Jerome, and both mills are in apple-pie order, the equipment and building of both having been brought as near perfection of efficiency as is possible. At Mont Rolland, which, in particular, is a model mill, a wing has been added in which an increase has been made in the number of beaters and large additions to the machinery, including tub-sizing equipment, have been installed.

Messrs. J. Kobayashi and H. T. Kitamura, Japanese gentlemen, who represent two large pulp and paper concerns in Japan, are making a tour of the United States and Canada, with the object (among other things) of looking into the methods of operation and organization in vogue among pulp and paper manufacturers on this continent. They were in Montreal last week and left there for Grand Mère with the intention of viewing in the Laurentide Company's plant a Canadian plant of magnitude and renown in operation. Messrs. Kobayashi and Kitamura are particularly interested in forestry problems. They state that, while the bulk of the pulp used in Japan is imported, there is yet a certain amount of spruce grown in that country. A certain amount of Japanese paper is also made from bamboo. These gentlemen intimate that it is the intention of pulp and paper concerns in Japan to take a hand in stimulating the growth of spruce. It is interesting to learn that the machinery used in the Japanese mills is very modern and up-to-date English and American pulp and paper machinery. The Japanese market at present is largely confined to that country and China, but certain grades of paper are exported. People who met these two Japanese representatives were greatly impressed with their command of the English language which they spoke with fluency and precision.

Mr. George Chahoon, Jr., was in Montreal last week as was Mr. George M. McKee.

Officials of the Riordon Company were emphatic in their denials last Saturday morning of the statements contained in an Ottawa news despatch of Friday night to the effect that the company was laying off 2,500 men at its Kipawa mills because of over-production and unsatisfactory conditions prevailing in the manufactured pulp industry. The shutting down of the Kipawa plant was admitted, but it was stated that this was of a temporary nature and one within the normal practice which has to provide for repairs and general overhauling of machinery. The number of men affected by the temporary closing of the plant, it was stated, was probably about 250, and not 2,500 as stated in the Ottawa despatch. Furthermore, it was said, manufactured stocks of sulphite pulp on hand were nothing like the ridiculous quantity referred to in the telegraphed reports, which valued these at some $5,000,000, or well up to a year's production at the mill.

The tenders for the groundwood mill to be erected by Mr. J. H. Dansereau at Sorel are in, but the contract will not be let until about the first of May. The mill in question will be of 40 ton capacity. The question of also going ahead with a paper mill is under consideration.

At the big Convention in New York, last week, the pretty general opinion among the pulp and paper men seemed to be that, while a good time might be expected in the fall, there was little ground for expectation of immediate returns. However, it was felt that there was no ground for any undue pessimism. The fact was fully appreciated that as between Canada and the United States, on the one hand, and Europe, on the other, the pulp and paper industry on this continent is, relatively speaking, in a favorable situation, in Great Britain today, many of the mills are closed up tight. They are over-loaded with expensive pulp. Not only so, but they are forced to compete, in their own market, with Scandinavia, whence they bought the expensive pulp with which they are over-loaded. On the other hand, Canadian mills are working fifty per cent of the "peak" of last year, which was the record year in the history of the pulp and paper industry. That the industry in the United States and Canada had a good deal to be thankful for, in comparison with conditions in Europe, was a view that was more and more borne in upon the Convention as discussion proceeded. At the end, the very general feeling seemed to be that the crisis had passed, and that, all things considered, it had been a far from protracted one.

With regard to the question of prices, certain sales managers incline to the view that while, in a general way, the market is a falling one, the two declines that have recently taken place were of so substantial a nature as to be likely to render any further immediate decline improbable. It is of interest to note that prices of certain grades of paper in Canada are about ten per cent lower than prices of the same grades in the United States — and this altogether irrespective of duties, etc.

One rather outstanding feature of the present situation is the way in which the book paper market has stood up. This is, possibly, largely due to the large issuance of catalogs and to the extensive use of book paper for advertising in journals. The advertising situation in Canada and the United States differs very materially from that in Great Britain. In the two former countries, it is advertising which forms the bulk of the publishing business. In Great Britain, on the other hand, it is very rare for the advertisements carried in a paper to represent fifty per cent of the whole paper's contents. Mostly it runs to forty per cent or less — and often considerably less.

The Toronto Paper Mfg. Company's mill on the Cornwall Canal and the Provincial Paper Company's mill at Mille Roches have been closed down for a few days, owing to some repairs that are being made to the canal.

George Carruthers and T. Linsey Crossley of Toronto were in New York last week attending a meeting of the joint text book committee held in connection with the annual meeting of the American Pulp and Paper Association. George Winlow, of the Canada Paper Company, was also a Toronto representative at the association meeting.

A. G. Pounsford, of the Port Arthur Division of the Provincial Paper Mills, spent a few days of last week in Toronto visiting the head office.

L. P. Bouvier, of Bouvier and Hutchison, envelope manufacturers, Lombard St., Toronto, who has been spending a holiday in the Bahamas Islands, along with Mrs. Bouvier, has returned to Toronto after a very enjoyable vacation.

The Strathroy Age, owned by G. D. Evans, has purchased the Strathroy Despatch owned by Richardson Brothers, thus eliminating one of the weekly papers in the Western Ontario town. The paper will now be published under the name of the Age-Dispatch.

The annual meeting of the Canadian Daily Newspaper Association has been called for Toronto on May 3rd, next.

Mr. Smith, of Smith, Davidson and Wright, wholesale stationers, Vancouver, B. C., has been spending some days in Toronto on business.

The Canadian Pulp and Paper Association is sending out a series of well prepared circulars to the trade designed to stimulate greater interest in the use of Canadian-made papers. The last circular sent out points out that last year Canadians imported considerably over a billion dollars worth of goods. Over 68 per cent of these imports came from the United States — and were paid for with Canadian dollars on which the exchange averaged from 10 to as much as 17¼ per cent. In other words, for every dollar's worth of United States goods, Canadians paid and are paying from $1.10 to $1.17¼ in addition to the duty. The circular calls on the printers of Canada to aid in getting the Canadian dollar back to its true worth by consistently supporting Canadian paper industries.

Already, as a result of the passing of Premier Drury's amendment to the Public Enquiries Act in the Ontario Legislature last week, the machinery has been set in motion for a resumption of hearings of the Timber Commission. When Government counsel has arranged with the commissioners for the first of the new sessions, steps will be taken to have stayed or permanently dismissed the injunction proceedings of the Spanish River Pulp and Paper Mills Company, which temporarily halted the probe, but which has been legislated out of court by the Ontario Government.

Mr. John Lewis, a former editorial man of the Toronto Globe, has rejoined the staff of that paper after a year spent as editor of Liberal Publications in connection with the National Liberal Committee at Ottawa.

A provincial charter has been granted to Empire Publications, Limited, with a capital stock of $750,000, and headquarters in Toronto. The company is empowered print and deal in books and other publications. The Dominion Publishing Company, Limited, is another new organization to receive a charter with power to engage in a general printing and publishing business. Among the promoters of the company is L. Murray Ray, of Toronto.

The Strathcona Paper Company, manufacturers of building papers and light board, Strathcona, Ont., reports that business in the sheathing line, which has been dull most of the winter, is beginning to pick up again. The company expects to start up their machine on sheathing papers almost immediately and are installing a new board machine which will be running by May 1st.

Spruce Falls Co., Limited, have not yet started work on the proposed groundwood pulp mill at Kapuskasing, Ont., and action will be deferred for the time being. The sulphite pulp mill of the company, with a maximum capacity of 120 tons, is steadily moving towards completion.

Over 30,000 cords of pulp wood from the Pembroke, Ont., district have been shipped across the line, while from the Gatineau and Perth districts a like amount has gone over to Uncle Sam. The 60,000 cords, together with the shipments to Canadian points, represents an expenditure of approximately $1,000,000 in the districts named, while Pembroke's share, counting spruce shipments to the Booth mill at Ottawa, is easily half a milion dollars. The average price paid per cord was $14 and it is estimated that this figure shows a profit to the producer of fully fifty per cent. It is stated that, owing to the thinning out method employed in reaping the harvest, in another five year's time another crop will be available.

The death took place in Toronto, a few days ago, of John H. Shaw, secretary treasurer of the Wilson-Munroe Company. Deceased, who was well known in the wholesale paper business, was a man of sterling character and possessed a wide circle of friends and business associates, who will mourn his loss. The late Mr. Shaw was born in Wentworth County in 1872, coming to Toronto 16 years ago where his executive ability attained for him a prominent position in the commercial life of the city.

A spark from a yard engine at the Thorold, Ont., plant of the Beaverboard Company, started a fire in a large pile of pulp and scrap paper a few days ago, but was extinguished before any of the buildings were damaged.

A new record in the erection of a paper machine has just been made with the completion of the new No. 5 machine of the Abitibi Power and Paper Company's plant at Iroquois Falls. James C. Simmons, of the Pusey-Jones, completed the installation in 28 days, working days of nine hours. The machine is 160 inch and will be electrically driven.

WHALEN DOING WELL.

Toronto, Ont., April 18.—Satisfactory conditions in connection with the operations of the Whalen Pulp and Paper Mills are reported by President T. W. McGarry, who has just returned from visiting the company's properties in British Columbia.

All three pulp mils are operating at full capacity under contracts made last fall, the larger portion of the sulphite produced being shipped to Japan. The output is close to 5,000 tons of sulphite per month. The company's two saw mills are operating to a capacity of 250,000 feet per day, and one of the two shingle mills is operating.

Contracts for sulphite will keep the pulp plants running for some time yet. The Whalen mills being located on tidewater, have an average over most Canadian pulp and paper plants, being largely independent of the high railway rates.

Technical Section

REVIEW OF RECENT SITUATION.

A-15; E-0. Digestion of Wood, etc., with the Aid of Chlorine. Ger. patent No. 323,936, A. FRANZ, Sept. 18, 1919. **J. Soc. Chem. Ind.**, xxxix, 745A (Nov. 30, 1920). The chlorine is used dissolved in an indifferent solvent such as carbon tetachloride. After extraction of the product with a 2 per cent aqueous sodium hydroxide solution, pure cellulose is obtained.—A.P.-C. ,

C-0 Wood Preservative. Br. Patent No. 148,137 (not yet accepted). F. BUB, Petershagen, near Berlin, Oct. 13, 1920. **Chem. Met. Eng.**, xxiii, 1229 (Dec. 22, 1920). Mercuric chloride solution is rendered more effective as a wood preservative by mixing with it a solution of fluorine salt such as sodium fluoride, a fluosilicate or a mixture of fluorine compounds with fluosilicates. The specification states that the mercuric chloride is converted into complex salts. The salt solutions may be applied separately to the wood.—A.P.-C.

E-0; F-0. Process for Treating Cellulose-containing Materials. Br. patent No. 147,232, ZELLSTOFFFABRIK WALDHOF, Mannheim, Germany, Sept. 29, 1920. **Chem. Met. Eng.**, xxiii. 1181, (Dec. 15, 1920). To avoid the deleterious effects of acids, alkalis, and salts on cellulose fibers and also on the by-products resins, tannin, carbohydrates, etc., due to the high temperatures obtained in the ordinary methods of treating wood and other cellulose-containing materials under pressure, the pressure is produced externally and independently of the temperature used, by forcing or pumping air or other gas or suitable liquids, such as that used for treating wood, into the apparatus in which the material is being treated. Fifty atmospheres pressure or more may be used. The apparatus may be first exhausted, and alternate vacuum and pressure may be applied to reagents used for other purposes such as saccharification.—A.P.-C.

E-2; K-10. Sizing of Paper by Sulphite Waste Liquor. Ger. patent No. 323,627, E. RASCH, May 31, 1916. **J. Soc. Chem. Ind.**, xxxix. 745A (Nov. 30, 1920). Concentrated waste liquors are used without removal of the bases present, and if necessary with the addition of further bases. If the calcium compounds present in the liquors are decomposed and the lime removed, the adhesive properties are impaired.—A.P.-C.

E-2. Method of Using Sulphite Waste Liquor. U.S. patent No. 1,329,300, H. H. HURT, assignor to Robeson Process Company, Jan. 27, 1920. **J. Soc. Chem. Ind.**, xxxix, 741A (Nov. 30, 1920). Finely-divided fuel is wetted down with concentrated sulphite waste liquor and charged on to a fire bed.—A.P.-C.

E-2. Decolorization of Waste Liquors. Ger. patent No. 324,787, A. WIPFLER, April 1, 1919. **J. Soc. Chem. Ind.**, xxxix, 779A (Dec. 15, 1920). Waste liquors from the manufacture of pulp are treated with metals or their compounds (stannous chloride, metallic chromium, and hydrochloric acid, chromic acid with aluminium bisulphate) capable of forming insoluble color-lakes with the coloring matter.—A.P.-C.

E-2. Paper Sizing from Mitscherlich Waste Liquor. Ger. patent No. 323,865, A. MICHL, Jan. 16, 1919. **J. Soc. Chem. Ind.**, xxxix, 779A (Dec. 15, 1920). Waste liquor from the Mitscherlich process is exposed to the air for a short time, and then centrifuged, a concentrated emulsion of the resinous constituents of any required density being thus obtained. The sizing material is fixed by means of alum.—A.P.-C.

E-2. Obtaining Fats from Sulphite Waste Liquor. Br. patent No. 146,430, W. Jeroch and Reichsausschuss für Pflanzliche und Tierische Oele und Fette Ges., Berlin, Sept. 15, 1920. **Chem. Met. Eng.**, xxiii, 1133 (Dec. 8, 1920). The sugar content of sulphite waste liquor is converted into fat by growing a fungus **Endomycea vernalis** on the liquor. The liquor is first treated—for example by aeration and neutralization—and is then inoculated with the fungus whose early growth may be assisted by adding nitrogenous substances such as beet juice to the waste liquor, or by first growng the fungus in a culture medium rich in nitrogen and then transferring it to the liquor. The first stage of the process is marked by a large absorption of nitrogen and by rapid growth of the fungus. During the second stage the sugar in the liquor is assimilated and converted into fat, and the growth of the fungus is slight. The masses of fungi are finally removed from the solution and treated for the recovery of fat.—A.P.-C.

F-0. Manufacture of Hemicellulose from Wood by the Soda Process. Ger. patent No. 324,053, T. and E. KITTELSEN, March 4, 1919. **J. Soc. Chem. Ind.**, xxxix,779A (Dec. 15, 1920). Wood is reduced to small fragments and boiled with clarified "black liquor." It is then washed, ground, and subjected to further treatment.—A.P.-C.

F-2. Tannins from Black Liquor. Br. patent No. 145,742, H. BRUER, Bonn-on-Rhine, Sept. 1, 1920. **Chem. Met. Eng.**, xxiii, 1037 (Nov. 24, 1920). Hides and skins are stated to be tanned by the application of constituents extracted from vegetable substances such as wood, straw and the like by means of alkaline liquids; or by formaldehyde or the salts of heavy metals such as chromium and iron, in the presence of such constituents. In an example, an extract obtained by boiling straw in soda-lye is mixed with iron-alum, in which case a yellow deposit is slowly brought down. This suspended agent is used for tanning.—A.P.-C.

F-5. Method of Producing Cellulose Fiber. U.S. patent No. 1,354,731, J. A. DeCEW, Oct. 5, 1920. **J. Soc. Chem. Ind.**, xxxix, (Nov. 30, 1920). Lignocellulose is impregnated with a solution containing 15 per cent of caustic soda under the usual conditions of temperature and pressure of pulp cooking. Excess of alkali is then removed so that the lignone is attacked only by the alkali absorbed.—A.P.-C.

F-5. Production of Soda Pulp from Vegetable Materials of all Kinds. Ger. patent No. 323,743, M. MULLER, Aug. 21, 1919. **J. Soc. Chem. Ind.**, xxxix, 745A (Nov. 30, 1920). Digestion is effected by means of soda or sulphate solutions to which alkali or alkaline-earth salts of lower fatty acids have been added or in which such salts have been formed by addition of lower fatty acids. Crude calcium acetate which contains calcium phenolate has a very favorable influence, and the addition of tar oils assists digestion.—A.P.-C.

F-5. Production of Pure Soda Pulps by Double Diges-

tion with Alkalis and Acids. Ger. patent No. 523,744, M. MULLER, Aug. 21, 1919. **J. Soc. Chem. Ind.**, xxxix, 745A (Nov. 30, 1920). Soda pulp produced by known methods of alkaline or neutral digestion is further treated with mixtures of inorganic and organic acids or their salts. The mother liquors from this second treatment contain precipitable substances which can be used for loading and sizing paper, etc.—A.P.-C.

K-6. Process of Obtaining Cellulose from Straw, etc., in Two Stages. Ger. patent No. 324,894, C. S. FUSCHS, May 2, 1918. **J. Soc. Chem. Ind.**, xxxix, 779A (Dec. 15, 1920). Vegetable matter, especially straw, is boiled with alkaline lyes at the ordinary or increased pressure, until a solution rich in lignic acids is obtained, and the boiling process is then completed with fresh lye. The acid precipitated from the first solution can be used as a resin substitute, etc.—A.P.-C.

K-23. Manufacture of Dense Strong Paper. Ger. patent No. 323,745, C. G. SCHWALBE, Feb. 21, 1918 (addition to 303,498). **J. Soc. Chem. Ind.**, xxxix, 779A (Dec. 15, 1920). Paper stock, or cellulose waste, is treated with acid, after which it is subjected to mechanical treatment in edge runner mills or disintegrators, and the gummy material so obtained is added to paper pulp.—A.P.-C.

K-23. Manufacture of Waterproof Paper. Ger. patent No. 323,816, H. WANDROWSKY, June 15, 1919, **J. Soc. Chem. Ind.**, xxxix, 779A (Dec. 15, 1920). Cellulose esters, insoluble in water, are added to paper pulp, and the paper, after drying, is treated with a soluble solvent for gelatinizing the cellulose esters. In the case of paper textiles, the solvent is not added till after the weaving process.—A.P.-C.

L-0. Saccharifying Cellulose. Br. Patent No. 146,455, A. WOHL, Danzig, Sept. 15, 1920. **Chem. Met. Eng.**, xxiii, 1133 (Dec. 8, 1920). Soluble carbohydrates obtained from materials containing cellulose by treatment with concentrated sulphuric or hydrochloric acid, are, after lixiviation in a counter-current, separated from the conversion acids by a process similar to the "molasses osmose" process. Sufficient acid is allowed to remain with the carbohydrates for complete hydrolysis during subsequent heating, or the acid may be removed as fully as possible, and the solution neutralized, evaporated to dryness and used as a fodder.—A. P.-C.

L-0. Linoleum. Br. patent No. 146,367. Phenoleum Ges., Berlin, Sept. 15, 1920. **Chem. Met. Eng.**, xxiii, 1037 (Nov. 24, 1920). A composition for making linoleum consists of cellulose treated with alkaline lyes and vapor of carbon disulphide, a rubber-like product obtained by heating glue or carbohydrates with glycerin and saponified resin. These ingredients are mixed, heated, treated with hardening agents, etc., kneaded and rolled up with cork meal, sawdust or other finely powdered cellulose and coloring matter. The mass can be applied to a backing of paper or not, as desired. —A.P.-C.

L-5. Cellulose Esters. Br. patent No. 146,092, Société Chimique des Usines du Rhône, Paris, Sept. 8, 1920. **Chem. Met. Eng.**, xxiii, 1132 ((Dec. 8, 1920). For the manufacture of cellulose esters of fatty acids, a cellulose is employed which has been preliminarily treated at a temperature not exceeding 30° Cent., with small quantities of acetic anhydride in presence of a catalyst diluted with glacial acetic acid. Thus, 100 parts of cellulose are treated with 50 parts of acetic anhydride, 3 to 5 parts of sulphuric acid, and 60 parts of glacial acetic acid at a temperature of 25 to 30° Cent., for 3 to 4 hours; 250 parts of acetic anhydride are then added and the mixture maintained at 40° Cent. for 1 to 2 hours to effect esterification. The esters may be separated by precipitation with water, or they may be converted by partial saponification into esters having different solubilities; the precipitated esters are insoluble in chloroform whereas some of the saponified esters are insoluble in chloroform and soluble in acetone and others soluble in ethyl acetate.—A.P.-C.

L-5. Spanish Moss as Source of Cellulose. U.S. patent No. 1,327,873, M. W. MARSDEN, Jan. 13, 1920. **J. Soc. Chem. Ind.**, xxxix, 744-A (Nov. 30, 1920). The material is boiled with dilute sulphuric acid, and the liquid is separated and used for production of sugar, alcohol, etc. The cellular residue is suitable for conversion into nitro cellulose, artificial silk, etc.; or after boiling with a solution of coap and glycerin, washing and drying, may be used as a filling for mattresses, etc. —A.P.-C.

L-5. Process for the Manufacture of Cellulose Acetates. U.S. patent No. 1,330,543, H. A. LEVEY, Feb. 10, 1920. **J. Soc. Chem. Ind.**, xxxix, 744-5A (Nov. 30, 1920). Cellulose is treated with chlorinated acetic acid; i.e., glacial acetic acid which has been treated with chlorine until it is distinctly yellow, and when disintegrated the excess acid is expressed and the mass dissolved in a mixture of acetic acid and zinc chloride at 55 to 70° Cent. and further treated with chlorinated acetic acid for 12 to 36 hours at 50 to 70° Cent. The product is then washed and dried at 60 to 75° Cent. It is soluble in ethyl acetate, ethyl butyrate, and pyridine, and insoluble in benzin, carbon tetra-chloride, and alcohol.—A.P.-C.

L-5. New Derivatives of Cellulose. Fr. patent No. 496,526, P. E. Ch. GOISSEUET, France, Aug. 6, 1919. **Chimie & Industrie**, iv, 668 (Nov., 1920). Three parts of phenylisocyanate is made to react with one part of cellulose in the presence of tertiary bases (pyridine) and yields a phenylcarbamic ester of cellulose. Phenylisocyanate can be replaced by an aliphatic or another aromatic isocyanate. These new cellulose esters can be put to the same uses as the other cellulose esters.—A.P.-C.

L-5. Cellulose Esters. Br. patent No. 149,320 (not yet accepted), L. LILIENFELD, Vienna, Nov. 3, 1920. **Chem. Met. Eng.**, xxiii, 1269-70 (Dec. 29, 1920). The more highly alkylated ethyl, methyl, benzyl and other alkyl esters of carbohydrates of the general formula $(C_6H_{10}O_5)$, such as cellulose, starch, dextrin, lignin, and inulin, are prepared from the lower alkylated esters of further alkylation in the absence of water or in the presence of only moderate amount of water. For the further aklylation a large excess of alkali is not required, and a quantity calculated on the amount of alkylating agent present is sufficient; an excess of alkali may, however, be employed, in which case the amount of alkylating agent is less than that necessary when considerable amounts of water are present. The products obtained are distinguished by their resistance to cold water and by their solubility in a large number of volatile solvents. By-products such as alcohols, ethers, etc., may be distilled off during or after the alkylation, or may be recovered from the alkylating mixture either by steam distillation or by extraction with suitable solvents. In an example the preparation of an ethyl ester of cellulose is described in which a viscose or an alkali- or hydro-cellulose and diethyl sulphate are the primary reacting materials.—A.P.-C.

UNITED STATES NOTES

A proposal of paper mill owners calling for a 30 per cent wage reduction and an increase in the working day from eight to nine hours met with a flat rejection on the part of union representatives of paper and pulp mill workers at the conference held recently at the Murray Hill Hotel, New York. Preparations are now under way to submit the action of the representatives by a referendum to the rank and file of the various unions in the United States and Canada for their approval or rejection, with the understanding that in case satisfactory agreements are not made between now and the time of the expiration of the present agreements, work will automatically cease in the mills of the company's involved. The unions represented at the conference, besides the two principal organizations of paper mill workers, of which J. T. Carey and John P. Burke, are presidents, were the International Brotherhood of Stationary Firemen, International Association of Machinists, Brotherhood of Electrical Workers and the engineers. These unions have formed a federation for joint action in the present dispute in order that all the workers in the different crafts may act together.

The Cotton Manufacturing Company, Montgomery, Ala., announce completion of plans to establish a pulp manufacturing plant in that city for the manufacture of pulp from cotton linters. Initial cost of the plant will be $100,000. Expansion in the utilization of waste cotton fibre and linters for paper is encouraged by the demand for paper, and location of the plant at Montgomery will assure an adequate supply of the raw products. The daily capacity will be about 200 bales of linters.

The International Paper Company is taking bids for the erection of its proposed hydroelectric power plant at Cadyville, N.Y. About $250,000 will be spent on the project. A. H. White, New York City, is architect and engineer.

A bill providing for the development of New York State's water power by private interests under State supervision was passed by the upper house of the Legislature at Albany last Thursday. Governor Miller is certain to sign the measure which is based on recommendations made in one of his messages to the legislators.

A tabulation of reports from 1,000 manufacturers received by the New York State Department of Labor shows that employment during March in the State's Factories increased somewhat over the preceding month. Depression continues, however, in the metal, paper and printing industries. Included in the several lines that showed notable reductions in employment during March, paper manufacture showed a falling off of 9 per cent.

The Robert Gair Company of Brooklyn, manufacturers of paper cartons and containers, have taken a lease on three floors in the new Borden Building, Madison Ave. and Forty-fifth street, New York, to house the large clerical force. The quarters of this division of the concern's staff at 50 Washington Street, Brooklyn, have been so cramped up that removal to new offices has been under consideration for some time past.

Henry Vettel of Cornell University has won a traveling scholarship for $1,000 for study in the forestry department of a Swedish university. He goes as one of a party of twenty American students all of whom have been appointed to scholarships for courses in the universities and technical schools of Denmark, Norway and Sweden during the school year 1921-22. The selections of these students were made by the American Scandinavian Foundation under the terms of a fellowship exchange between the United States and Scandinavian countries which provides for twenty Scandinavian students at American universities. One other student besides Mr. Vettel will study forestry.

Although the report of the International Paper Company shows record earnings for last year, equivalent to $52.07 a share on the common stock, against $13.24 a share the preceding year, there is very little likelihood of the company beginning dividends on the common shares during the current year. President Dodge, in his statement to the stockholders, says that there is absolute necessity for speedily acquiring additional woodlands, purchasing outside wood for the time being, and cutting it in a conservative manner. He says that this cannot be accomplished without the investment of a great amount of additional capital, probably hard to obtain on reasonable terms at the present time. Consequently current earnings or profits of the company shall be largely invested for a considerable period in wood protection. It is the sincere effort of the management, according to Mr. Dodge, to prevent the recurrence of unwise dividend payments of past years and so strengthen the company that all dividends once established may be maintained.

Richard E. Thibaut, who was known as one of the leading wall paper manufacturers of the United States, died suddenly a week ago on his country estate, Fairfield, N.Y. Mr. Thibaut was born in Milford, Pa., fifty-eight years ago. He was brought to New York when a boy and educated in the public schools there. At the age of twenty he had established himself in a business of his own—a wall paper house, that finally developed into the present firm, Richard E. Thibaut, Inc.

Camp Fires, Railroads and Brush Burning Responsible.

Much of the destruction caused by forest conflagrations is attributed in figures compiled by the United States Forest Service to carelessness on the part of campers. The statistics which cite the origin of fires of various sorts in the country's forests during the last five years, show that 12½ per cent of the damage resulting from such blazes may be traced to camper's fires. These are fires that have not been properly wetted down or stamped out. Lightning is shown to have been responsible for nearly 10 per cent, railroads about 15 per cent, and brush burning nearly 14 per cent. The total area burned from all causes during the last five years would exceed that of the combined States of Delaware, Rhode Island, Connecticut, Massachusetts, New Hampshire, Vermont, New Jersey, Maryland and West Virginia.

BOOK REVIEWS.

Technical Methods of Analysis.

The Committee on Bibliography of the Technical Association, Clarence J. West, chairman, desires to direct the attention of members of the association to a recent valuable book of analytical methods edited by Roger C. Griffin which is entitled **Technical Methods of Analysis as Employed in the Laboratories of Arthur D. Little, Inc., Cambridge, Mass.**

This book which is published by McGraw-Hill Book Company, New York, contains a representative selection of the analytical methods that have been adopted as standard procedures in a large commercial laboratory engaged in technical analysis.

With few exceptions the methods described in **Technical Methods of Analysis** have been used many times in the laboratory and have been proved to give satisfactory results in the hands of different analysists. No attempt has been made to give the experimental data to show the accuracy of the method nor to enter into the theory of the procedure. On the other hand in many cases it has seemed advisable to give brief descriptions of the properties which a given material should normally possess and sufficient other information to enable the analyst to translate his results into practical language. Certain specifications and requirements of an authoritative nature have also been included.

An idea of the scope of the book may be gained from the Table of Contents, which includes, Reagents, General Inorganic Analysis, General Organic Analysis, Analysis of Metals, Analysis of Fuels, Analysis of Paints and Paint Materials, Analysis of Oils, Fats, Waxes and Soaps, Analysis of Wood, Paper and Papermaking Chemicals, Analysis of Textiles and Textile Fabrics, Analysis of Foodstuffs, Miscellaneous Analyses.

Members of T.A.P.P.I. and others will be especially interested in Chapter VIII, Analysis of Wood, Paper and Papermaking Chemicals, though there will be much of interest in the other chapters. This chapter contains the following methods of analysis: Cellulose in wood, Woodpulp sampling and testing, Sulphate cook liquor, Sulphite acid, Alum, Aniline dyes, Blanc fixe, Bleach (bleaching powder), Bleach consumption of pulp, Casein, Clay for paper filler, Crown filler, Glue, Lime, Limestone, Rosin, Rosin size, Satin white, Talc for paper filler, Ultramarine, Fibers in papers, Standard papers for fiber analysis, Chemical analysis of paper, Physical testing of paper, Sizing in paper, Tarnishing test for paper, Cotton cellulose (cotton linters) for nitration, Wood distillation products. Three plates, showing the appearance of variously sized paper are included as well as certain paper testing apparatus, taken from Mr. F. C. Clark's Report.

The chapter contains all the methods needed in the routine testing of paper, and covers much the same ground as that transversed by Sutermeister in his chapters on testing. The one advantage of the book is that the methods have been used over a period of years and are known to give results.

The U. S. Bureau of Mines notes a steady decrease in the volatibility of motor gasoline—another straw pointing to the use of sulphite alcohol.

THE EFFECT OF AGE ON THE BURSTING STRENGTH OF CORRUGATED FIBRE BOARD.

By J. D. MALCOLMSON.
Millon Institute, Pittspurg, Pa.

The effect of age on ordinary papers has been fairly well established by a number of careful investigations extending over long periods of time. This has never been done n ithe case of fibre containers, however, owing to the comparatively recent development of this industry.

During this development, there has been considerable speculation as to whether age would have different effects on this material than on ordinary papers. Such a difference might reasonably be expected because of the use of various chemicals such as silicate of soda and those used in the sizing. In addition, container board, and especially corrugated board, is made up of a variety of fibrous substances, such as straw, waste papers, kraft pulp, etc., any of which might have some effect on the future strength of the board.

This Laboratory recently had occasion to re-test some seventy different samples of corrugated boards which were secured in 1916. Most of these boards were made in 1915 and 1916, although some dated back to 1910. At the time these samples were obtained, over four years ago, they were carefully tested with the Mullen Tester, ten punctures being made in each board to secure an average. The original samples and data were all preserved, and the tests repeated in 1920, using, in each case, the same manipulation, namely, a wheel speed of 120 R. P. M. and the so-called "constant level clamp."

The results of these two series of tests are shown on the accompanying table. They indicate,

1. That the average of seventy-one samples showed a decrease in Mullen test of only one per cent in four years.
2. That chemicals, such as silicate of soda and sizing, had no noticeable effect on the final strength of the boards.
3. That deterioration is roughly proportional to the amount of ground wood present, which has also been found true in the case of ordinary papers.
4. That boards containing a large amount of new kraft or sulphite fibres very often show an actual increase in strength. Thus it will be noticed that nearly every sample made by "Mftr. No. 5" increased in strength. These particular boards all contained a large percentage of new chemical wood fibres.

Some of the results of microscopical analyses are entered on the table opposite such samples as showed a marked change in strength. Those containing a large proportion of ground wood suffered most and became extremely brittle. The kraft liners, on the other hand, showed no loss in bending value.

It was noticed that very few of the boards showed the "washboard effect" when wetted. Where this occurs, it is probably due to the silicate of soda "striking through" the board, saponifying the rosin sizing. This usually indicates an inefficient application of either adhesive or of sizing, since many corrugated boards but a few weeks old will show this effect when wetted. In other words, this investigation also tends to show that silicate of soda, properly applied, has no ill effects on the waterproofing of corrugated fibre boards.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, April 16. — With business very quiet in pulp and paper circles and with comparatively little turn-over, a number of the mills, notably the newsprint mills, are contemplating a reduction in wages to the employees. It is known that such an action is under consideration at the present time, due to the altered business conditions, and if decisions are reached along this line, they will likely take effect May 1st or thereabouts. Just what the reductions will amount to is not known, but it is variously estimated that the cuts will represent from fifteen to thirty per cent in some of the newsprint mills, while book and writing paper mills may effect a reduction of ten per cent. No definite decision has been arrived at yet, but it is common knowledge that the mills are seriously considering a downward revision of the wage scale and that May 1st will see a radical change. Most of the pulp and paper mills at the present time are running short time and very few of them are running any where near capacity, while in some instances complete shut-downs have been necessary. Newsprint demands are being lessened to some extent by the elimination of some of the weekly papers. An instance of this is the absorption of the Toronto World by the Toronto Mail and Empire which went into effect last week, the Mail and Empire having bought the World from the liquidators of the latter paper. The process of absorption is going on in a number of the smaller places also, Strathroy, Ont., having merged its two weekly papers during the past few days.

Employing printers are holding back in their orders owing, to some extent, to unsetttled condition of the trade precipitated by the demand of the printers for a 44-hour week and increased pay, with its threatened possibility of a strike. These are adverse conditions that are seriously affecting the paper trade, and although they are likely to be of a temporary character, they have had an upsetting effect. The industry, as a whole, however, is in a healthy condition and the spirit of optimism is strong among manufacturers and wholesalers. Expansion plants are only temporarily halted and some of them will be proceeded with, while others will be held pending a return to normal conditions, which it is confidently expected will be before many more months have elapsed. It is understood that there is a possibility that the new mill at Port Arthur, of the Provincial Paper Mills Company, Limited, will be gone on with at a date not far distant. The plans have been prepared and are being studied, but as yet the company has made no announcement as to when work is likely to start.

Clarke Bros. have opened their new fibre case plant at Glen Falls, N.B.., which will be used exclusively for the manufacture of corrugated fibre boxes to be made of high grade kraft pulp, while annual statements of such companies as the Maurice Paper Company and other like concerns, not only indicate a satisfactory growth of the paper industry, but show that these companies are strong financially. There are many signs that the pulp and paper industry is sound at the roots and that the present lull in business is but a prelude to still greater development and expansion as soon as the temporary dull period expires.

PULP. — Very little pulp of any grade is moving and the mills report a small demand. Although no transactions of importance are taking place, some sales are being made at prices around $130 for bleached and $100 for natural, with ground wood at $45, although these figures are only an index of what the mills are getting. When it comes down to a deal these prices are likely to be shaved a bit and there is usually considerable negotiation before a figure is arrived at and the shipment sent out.

TISSUES AND TOILETS. — The market in these lines is very much curtailed and none of the mills are running at capacity. What demand there is is confined to small orders which bulk fairly large at the end of the month, but there are no large orders going in any line and the prices remain unchanged. A feature of the trade last week was the putting on the market by the Interlake Tissue Mills, Limited, Merriton, Ont., of a new line of interfolded paper towels, which the company have not hitherto made. They are also supplying the cabinets as well.

KRAFT.—There has been a distinct improvement in the kraft market during the past couple of weeks and the mills report freer orders, with the price remaining at ten cents per pound. One mill reports that already this month they have booked a bigger tonnage than during the whole of last month and that there are evidences of a restoration of confidence in the trade.

WRAPPING PAPERS AND BAGS. — The feature of the wrapping paper and paper bag trade during the past week has been a further decrease in bags, which took a drop of ten per cent. The prevailing discounts on paper bags under the new schedule are as follows: manila 55 p.c., 10 and 5: kraft 65 and 5: white, 45, 10 and 5. There is no change in the wrapping paper situation and business remains dull.

BOOK PAPERS, BONDS AND LEDGERS. — A canvas of the job houses in Toronto indicates that stocks in the above lines are becoming somewhat depleted, although there is no great tendency on the part of the jobbers to re-stock. One jobber who wanted some 25x35-40 book paper says that he tried practically all of the jobbing houses in the city and was unable to procure it. There has been some revival of business in books, bonds and ledgers, one jobber estimating an increase of fifteen per cent in out-going stuff during the past month over any one month since the dull period set in which is taken as an indication that paper users are gradually getting back into the market. Jobbers are not looking for any further reductions in prices for at least two months.

BOARDS. — There is very little demand for boards and printers blanks and box boards and practically no market as to price. Jobbers and other dealers report that they are virtually able to go to the mill and make their own price on any line they want to buy, although they are putting very little in stock.

It is further stated that quite a number of American travellers have been in Canadian territory of late, but their visits have been more of a social character as far as doing business in any paper line is concerned and practically no orders are being placed.

NEW YORK MARKETS.

New York, April 16 — (Special Correspondence.) — This has been "paper week" in New York, when paper manufacturers and merchants from various parts of the country have been gathered together to attend the annual conventions of the American Paper and Pulp Association and the National Trade Association, and the result has been that business has been quieter than previously. With mill executives away from their desks and with paper jobbers and distributors absent from their offices, it is but natural that trade activity has slowed up somewhat; this is a usual occurrence during convention week. The market as a whole has undergone no important changes. Demand has not broadened, excepting possibly in some out-of-the-way cases, and it is still plainly apparent that buyers are operating on a very reserved scale, confining purchases to supplies needed for immediate use.

Reports brought to New York by visiting paper manufacturers and jobbers show conclusively that business throughout the country is slow. Producers of paper and board say that their plants are running at no more than 50 per cent of capacity on an average, and jobbers that consumers the country over are buying solely to fill current requirements, which, at best, are considerable below what they ordinarily are. It is gratifying to be able to say that a concensus of views among the paper men attending the meetings in this city this week is that the sooner prices get down to a level where they will remain for a time, the sooner will demand for paper and paper products increase. It is also gratifying to be able to say that most of those present at the conventions were heartily in favor of a reduction in paper prices to a point where buyers can be induced to take hold and absorb larger amounts of paper. Statistics cited at the various meetings during the week showed that present prices are substantially below the high levels reached last year and yet indicated that further sharp declines will necessarily have to occur before prices are on levels comparing favorably with these existing prior to the war.

A prominent paper manufacturer stated in an address that in spite of the extremely high prices prevailing in 1920 on fine papers that his concern operated on a profit basis of only 7 per cent. This is proof positive that high paper prices have been the result of high raw material and labor costs, and it stands to reason that prices on the finished product cannot be brought down until the cost of manufacturing is reduced. Raw materials have receded in recent months until in some instances they are down to actual pre-war levels; the great difficulty now therefore rests with labor.

That paper manufacturers intend to carry out their program of getting prices on their product down to more reasonable levels by reducing the cost of production can be seen in the plans of newsprint manufacturers to cut wages 30 per cent and increase the working day from eight to nine hours. Obviously, the union of paper mill workers is opposing this move, and present indications are that it is quite probable a strike will be declared by newsprint mill workers, to become effective May 11. A strike vote is scheduled to be taken on Sunday, April 17, following which conferences between the union leaders and manufacturers will be resumed.

The newsprint market rules exceedingly dull. Spot demand is negligible and contract buyers are not beginning to use their normal tonnage of print paper. Quotations are very irregular, and, in fact, mean little today, because buyers invariably can secure supplies at less than the prices named. So-called distress lots of newsprint are being constantly placed on the market to sell for whatever publishers will pay, and sales of roll news at 4 cents per pound are not uncommon. Contract quotations are maintained but mills are booking few new orders. Instead, some publishers are cancelling contracts.

Book papers continue to recede in price. Machine-finished book in job lots is offered in New York by mill agents at 7 cents per pound and less, while supercalendered book is available at 7½ cents and coated and enamel book at as low as 9½ cents for some grades. The printing trade is decidedly dull and this is reflected in a light demand for book papers. Wrappings and tissues are moving in fairly steady fashion though in limited volume. Demand for some kinds of tissue, principally toilet paper, towels and napkins, is gradually improving, and it is stated that mills producing these papers are running probably at a larger capacity than any other class of paper mills. Fine tissues, however, are in little call, and No. 1 white is quoted at 90 cents to $1 per ream.

Fine papers are just about holding their own in point of market activity. Demand shows little or no expansion, yet matters have not become any worse. Prices on bonds and ledgers are very irregular and it is difficult to ascertain what constitutes an average basis of values. It is stated that mills in the New England district mostly have sizable stocks and that they are making deliveries principally from stock.

Demand for boards continues narrow. Consumers are purchasing in hand-to-mouth style and are not absorbing anywhere near normal amounts of board. Quotations on plain chip range between $30 and $35 per ton at mills, and on filled news board at from $32.50 to $37.50.

GROUND WOOD. — Mechanical wood pulp is moving only in small tonnage and at prices close to the low edge of quotational ranges. Buyers show scant interest in offerings at above $30 per ton f.o.b. grinding plants and seem to be filling present requirements through purchases at around this basis. Grinding mills are operating at materially reduced capacity but still appear to experience difficulty in marketing their output, and were it not for the contract business transpiring, it could be said that trade is virtually at a standstill. Board manufacturers are almost entirely out of the market and there is little demand from newsprint mills. The situation clearly reflects the dulless prevailing in the paper market and it is unlikely to improve until business in the finished product increases.

CHEMICAL PULP. — Aside from occasional sales of small lots of different grades, there is nothing in the form of business stirring in chemical wood pulp. Dealers and importers are managing now and then to dispose of a limited-sized quantity of pulp to some consuming mill needing it for immediate use, but buying is solely of such character, and involves an unimportant total volume of pulp. The trend of prices continue downward. There is no established basis of value on any grade, and it is plain to be seen that sellers are more often obliged to grant concessions from the prices asked to move stock. News grade sulphite is quoted at about $70 a ton at pulp mills and yet the great bulk of this kind of sulphite moving brings no more than $60. Domestic easy bleaching sulphite is quoted at about 4.50 cents per pound at producing mills, domestic No. 1 bleached sulphite at 6 to 6.50 cents and domestic No. 1 kraft at 3.75 cents, while buyers invariably are securing wanted supplies at cheaper figures.

RAGS.—Paper manufacturers display very little buying interest in rag stock. Offerings by dealers mostly elicit the reply that mills are not desirous of buying, having present needs covered and not being willing to anticipate forward requirements. The naming of low prices attracts few buyers; consumers are pursuing a policy of refusing to absorb supplies regardless of how cheaply they can buy. As a result, it is hard to say what market levels are. Dealers ask one price and then turn around and sell at a cent or two per pound less when afforded an opportunity to rid themselves of a part of their holdings. Even roofing rags are moving lower in price. Sales of No. 1 roofing at 75 cents per cwt. at shipping points have been reported, whereas only a short while ago these rags were fetching $1 per hundred. Repacked No. 1 whites are freely offered to mills at 6 to 7 cents a pound, depending on the packing; repacked thirds and blues at 2.50 cents, and miscellaneous No. 1 white rags at 5 cents. Practically no sales of new cuttings have been recorded and prices on such rags are strictly nominal.

PAPER STOCK.—As one trader describes it, the waste paper market "is shot to pieces." Demand from consuming quarters is of negligible character and the small amounts of goods moving toward mills do not even skim the supply that is available. The prices prevailing on most grades are at levels where packers and collectors have stopped operations because of the loss they suffer in producing stock to sell at the figures obtainable. Old No. 1 mixed paper is offered at 25 cents per cwt. f.o.b. shipping points and folded newspapers at 40 cents without attracting buyers for the reason that board mills are not in want of supplies and therefore refuse to take material in. Sales of hard white shavings of No. 1 quality to mills at 3 cents a pound at shipping points and No. 1 soft white shavings at 2 cents have been reported, with the probabilities favoring buyers getting some lots at still further reduction in price. Old books and magazines are available at 85 cents per hundred pounds, old kraft paper at 1.40 cents and white blank news cuttings at 1.50 cents, while ledger stock is offered at 1.65 cents and old No. 1 manilas at 75 cents.

OLD ROPE AND BAGGING.—Old rope holds up in price at between 3.75 and 4 cents a pound at shipping points for No. 1 manila rope. There is also a moderate call for mixed strings at around 85 cents per cwt. Bagging is neglected by buyers and can be bought at almost any figure within reason which is offered. Offers of No. 1 scrap bagging at $1 per cwt. result in few sales as mills are not disposed to buy while not in immediate need of fresh supplies.

THE STRENGTH OF RIORDON CO., LTD.

(Continued from page 429.)

over 12,000,000 feet of pine, besides very large quantities of merchantable and easily accessible cedar, poplar and various hardwoods—constitute the largest area of pine and pulpwood holdings under one control in the world. And the ownership of over 6,000 square miles of timber limits in one block, adjacent and tributary to the Gatineau river, which empties into the Ottawa river a few miles from the city of Ottawa, places the Company in possession of one of the largest supplies of timber and pulpwood on one watershed in the world.

Among its other interests, the Company owns a controlling interest in the Ticonderoga Pulp and Paper Company, of Ticonderoga, N.Y., which makes the finest book paper on the continent, and which also operates a soda pulp mill with a yearly production of 11,000 tons.

Further, the Company owns, or controls by lease, either in its own right or through its subsidiaries, extensive water powers, of almost inestimable value, with 11,000 horse power at present, but with a total ultimate capacity of 175,500 horse power. These water powers, and the respective capacity of development of each are as follows:—

Watershed	Capacity of Development H.P.
Quinze River	45,000
Gatineau River	45,000
Kipawa River	40,000
Rouge River	25,000
Nation River	7,500
Lievre River	5,000
Welland Canal	5,000
Rideau River	3,000
Total	175,500

The watersheds of the Kipawa, Quinze, Rouge and Gatineau Rivers, have a combined area of approximately 34,000 square miles. A large portion of this area is the surface of lakes and rivers. These provide enormous natural storage areas for the eventual development, as the Company may require it, of an immense additional amount of electrical power. The Gatineau power is within six miles of the City of Ottawa, which City at the moment is suffering from a shortage of hydroelectric power. The development of this water power to such an extent as may afford a surplus of power over and above the Company's own requirements is contemplated so that revenue may be derived from the sale of surplus power in Ottawa.

As regards pulp and paper production, the total is 153,000 tons a year of which the various plants of the Company and its subsidiaries contribute as follows:

	Tons Per Annum
Kipawa Mill, Bleached Sulphite Pulp	42,000
Merritton Mill, Bleached Sulphite Pulp	9,000
Hawkesbury Mill, Bleached Sulphite Pulp	40,000
Hawkesbury Mill, Easy Bleaching Sulphite Pulp	8,000
Ticonderoga Mill, Soda Pulp	11,000
Ticonderoga Mill, Book Paper	18,000
Present Production	128,000
Addition to Kipawa Mill	25,000
Total Production Pulp and Paper	153,000

Lumber production attains a total of 125,000,000 board feet a year made up as follows:

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a combination of the foremost Ground Wood Pulp and Board Mills in Finland, makers of various kinds of boards and dry and wet Brown and White Mechanical Wood Pulp.

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INQUIRIES SOLICITED:

	Board Ft. Per Annum
Gilmour & Hughson Mill, Ottawa....	25,000,000
W. C. Edwards & Co. Mills, Ottawa and Rockland	80,000,000
Riordon Mills, Calumet	20,000,000
Total Lumber Production	125,000,000

It should be added that the Gilmour and Hughson and Edwards mills produce mostly fine and spruce lumber, while the Riordon mills at Calumet produce spruce and hardwood lumber.

Physical assets of the kind that have been briefly summarized above give some idea, although, by reason of their very magnitude, it is difficult for the mind fully to grasp their size and significance, of the material strength of the Riordon Company, Ltd. Further, it is but the literal truth to say that, whether in building construction, in machinery, in technical skill and equipment or what not, it plays a pioneer part in efficiency and up-to-dateness of method. With a consistency that has known no deviation, it has addressed itself to the improvement alike of its plants and of its methods of scientific control. The result is—and informed opinion is pretty generally unanimous on the point—that in the lines that it has made especially its own, that is to say, the manufacture of book and magazine papers, writing paper and paper for office use, its products are second to none of these kinds in the world.

GOOD ON BOTH ROADS.

One of the practical advantages of co-ordination of Canadian National and Grand Trunk lines of railway, is shown by a recent order which enables the use of mileage books issued by one road on the trains of the other company if desired.

Previously, if a business man were travelling, from Toronto to Ottawa for example, his Canadian National "book" would be valid to that point. But if he wished to continue his journey to Montreal over the Grand Trunk, it would not have been good on the G.T.R. train.

The order just issued wipes out the distinction, in a mileage-book sense, between C.N.R. and G.T.R. Books issued by the Grand Trunk are good over all eastern lines of the Canadian National and, likewise, those issued by the C.N.R. are valid on the trains of the G.T.R. One capital outlay takes the place of two which should be a matter of satisfaction to the travelling public.

Don't try to kill time. He can stand the fight longer than you can.

News From Our Advertisers

WILLIAM WHYTE ON HIS OWN.

There are few men better known to the pulp and paper industry than William (Billy) Whyte, who has been for several years the popular representative of Canadian Fairbanks-Morse, Ltd. Besides his wide selling experience, Mr. Whyte has been a successful mill manager.. He is now an independent agent, representing manufacturers of paper and pulp mill supplies, including felts made by Ayers, Ltd., and fourdrinier and cylinder wires made by Niagara Wire Weaving Co. and Lindsay Wire Weaving Co. We wish him all success.

RAPID UNLOADING OF PULP WOOD.

A smart performance in the way of unloading rail wood was accomplshed by a gang of men for the Laurentide Company, Limited, Grand'Mere, P. Q. Each man averaged 5.15 cords per hour. During the month of February 295 cars, containing 4939 cords, were unloaded, this being 5.01 cords per man per hour. The wood was peeled, ready to be placed in the block pile.

Scandinavian American Trading Co.

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Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XVIX. GARDENVALE, P. Que., April 28th, 1921. No. 17

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The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.
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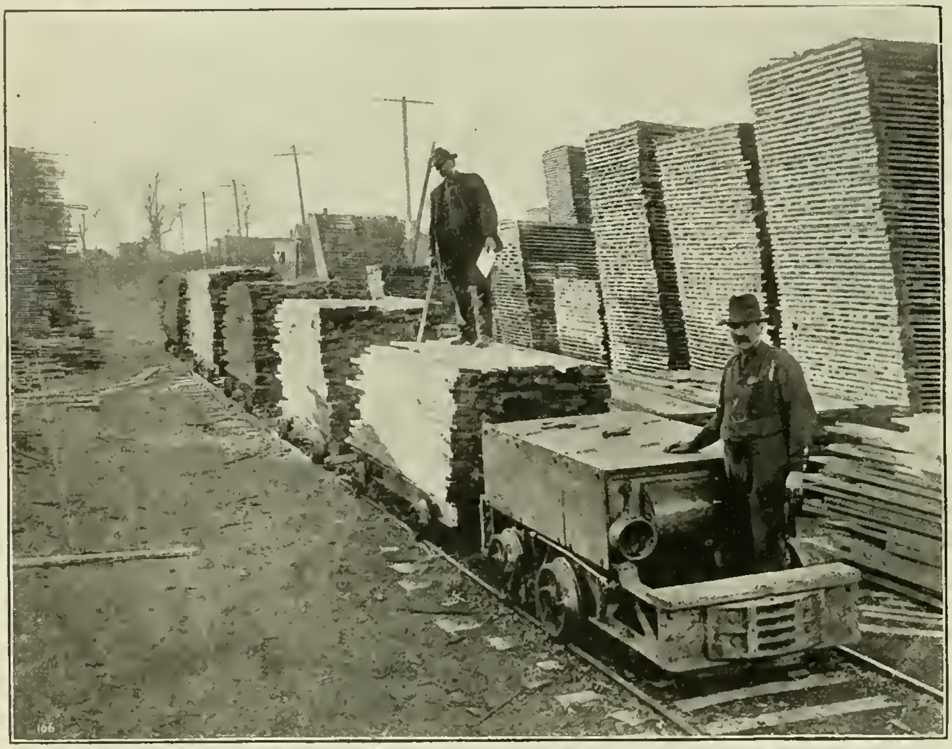
Cutting costs of haulage for Pulp and Paper Mills



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EDITORIAL

HOW THE TEXT BOOKS WILL HELP THE FOREMAN.

In most cases the foreman of a department is selected from the rank and file because of his ability to perform all the operations carried on there. This applies to pulp and paper mills as well as to other industries. There are certain education fundamentals that must be met, but many men are promoted to the position of foreman in emergency when they have scarcely the minimum of training. When a man is promoted to foremanship who can only read and write a little and carry out the most simple calculations, and that often very imperfectly, it means that he has not been able to boaden his perspective or enlarge his capacity by the study of material that would help him to be more efficient in conducting his department. It is being more fully recognized on every hand that the position of foreman is something more than that of the glorified workman. It carries a sense of responsibility and involves need of executive ability which have heretofore been largely disregarded in the selection and development of such men. The United States Bureau for Vocational Education has recognized the importance of the foreman as the key man in industry and is continuing a plan found so successful in the past, of organizing foreman training conferences in large plants and industrial centres. The result of such work, which is also being conducted to some extent by private agencies, is that on the foundation of skill and knowledge of his own part of the plant, the foreman is instructed and developed along administrative lines, so that he is in a position to plan the work of his department more efficiently, to understand the relation between his department and the organization of the business as a whole, and in his position of being intermediary between men and management, is able more successfully to maintain cordial relations and smooth and efficient operation.

With all due regard for the importance of developing the side of the foreman's character just mentioned, one cannot lose sight of the fact that knowledge of his own industry in general and his own department in particular, is the foundation of a foreman's success. There is no question but that men have greater respect for the leader who has a wider vision and a greater knowledge than they have. Some foremen are able to acquire such by experience in many plants. This is about the only kind of moss that a rolling stone gathers and it often stands a man in good stead. A broad working knowledge, however, can be obtained by intelligent study. It is one of the principal purposes of the Textbook which is being prepared for the pulp and paper industry, to provide an opportunity for ambitious employees in the industry to study the operations involved in the various departments both in pulp manufacture and in the making of paper. Besides thus providing the opportunity for any one to acquire a broad knowledge of the industry by careful reading, one may also become more fully informed with regard to the equipment and operations involved in each department by a close study in a more detailed way of such equipment and operations.

The value of the books to the foreman is not confined alone to the opportunity for him to increase his own ability but it helps him by giving his men a chance to study their own work and thus become more efficient and capable. This improvement in the character of the men in his department raises the intelligence of the whole force and enables the foreman to do his work with the intelligent co-operation of assistants who are thoroughly familiar with the principles involved in each process and who understand the functions of the equipment. With his best men studying their work in this way, the foreman may have to exert himself to keep a few jumps ahead of them but he will find that the added incentive and enthusiasm of doing work that is understood, fully compensates for the mental effort involved. He will find that directions are immediately understood and properly executed and that the efficiency of his department and the smoothness with which the work goes on are considerably increased. It seems likely also that he will have one or two understudies who can act in case of need, as assistant foreman, thus relieving him of much of the worry of everyday details and giving him opportunity to study the operation of the plant as a whole and particularly the relations between his department and those preceding and following it, thus fitting him for promotion as vacancies occur in higher positions. Even disregarding the thought of immediate advancement, the more thorough understanding of his work makes it more interesting and worth while to him and makes him more contented and happy in the knowledge of his ability to do his own important part in the most satisfactory manner. This satisfaction is in large part its own reward, but the ability that goes with it is seldom overlooked by intelligent management without more tangible expression of appreciation.

There is no one in the industry who can read English who will not profit by a study of these text books. The first two volumes deal with Mathematics and Elementary Science which form the foundation for the subsequent discussion of the equipment, processes, and principles involved in pulp and paper manufacture. The editor of the Text Books anticipated some disappointment that the first two volumes to appear were of this preliminary and elementary character but he has been not a little surprised, and greatly pleased, with the interest that is being shown even in the Arithmetic and Elementary Physics, not only by mill men, but also by college graduates who have not previously appreciated the many points at which these subjects bear on everyday mill work. They have expressed themselves as greatly pleased with the way these subjects have been handled and feel sure that a careful study of these elementary sections will be of great assistance to operatives as well as technical men, in understanding the work done in each department.

Plans are rapidly developing for the distribution of the books in Canada and an announcement will be ready very shortly giving full particulars. In the meantime any who wish to begin on the series may place their order for the set, which will consist of five volumes, accompanied by $5.00 in payment for Volume one. Volume two is printed and is ready for binding and will be available as soon as the book binders in New York resume work.

A NEW WAGE AGREEMENT.

The discussion of the new wage agreement to replace the present arrangement between the Unions of Pulp and Paper Makers and some of the Manufacturers of these products is now engaging the attention of the industry. It will be recalled that about a month ago the Unions decided to ask their employees for an increase of from 5 to 10 per cent in their wages, but subsequently at a meeting of representatives of the unions and about 50 mills, the latter announced that there would be a reduction of 30 per cent from present rates and suggested some changes in working conditions. From recent developments it seems that both sides had over-stated their expectations, perhaps with the thought that the higher the aim the higher the hit. It is difficult to know exactly the motives or the expectations in either case.

There are several difficult features in the wage situation that affect the paper industry which perhaps do not apply generally. In the first place, the unions are international bodies and an agreement on such a subject naturally applies on both sides of the line. With wages at the same rate in both countries or with the same change in wages applied to both countries, the scale would seem to be a bit out of harmony with the fact that living costs have dropped further in the United States than in Canada. A uniform application, therefore, would seem to entail some unfairness. Another point is that when the unions formulated their demand for an increase in wages, the paper industry had just come to the end of an unusually profitable period and was still relatively prosperous in comparison with other industries, in many of which decreases in wages had already been agreed to, and in some cases had even been proposed by the workers themselves in these lines. Since that time a good deal of the gloss has worn off the paper situation and reflections are not so bright as they were. Wages, and salaries as well, are being cut on every hand.

The desire of the manufacturer is to bring his costs of production to a point where the consuming public with their generally diminished revenue can afford to buy his goods. This cannot be done unless every expense factor in his business is brought to a lower level. Costs of raw material have in nearly all instances dropped enormously. Advertising is beginning to feel the pressure and magazines and newspapers are smaller now than they have been in years. Selling expense has been decreased in some instances by cutting salaries and, relatively, by much greater activity of the sales department. Profits and dividends are only names to many a producer today. Many employees have come to realize that the manufacturer cannot afford to carry on any longer on the old scale of wages, which means doing business at a loss, and have agreed in a friendly way on a lower basis. Where wages, due to cutting or resulting from the inability of the manufacturer to sell enough goods to keep working full time, have dropped off more rapidly than local costs of food, rent and clothing, there has been hardship and there will be hardship until buying is resumed in greater volume.

The point which seems difficult for many to understand is that a dollar actually will buy more now than at any time during the last three years. This makes it hard for people to realize that while they are getting fewer dollars they are getting a greater purchasing power with the dollar so that the aggregate received in terms of commodities is not decreased in the same proportion as the cut in wages. The relative improvement in the worker's condition, over what it was prior to the war, is therefore maintained so long as there is no great difference between decreases in wages and in living costs. There are two principal elements then in the wage decrease, one is the absolute necessity that the manufacturer reduce his costs or go out of business, with the resulting entire stoppage of work for his employees, and the gradual drop in costs of living which compensates for and alleviates the smaller pay envelope.

It seems to us very unfortunate at a critical time like the present that a body of employees should demand a wage which they know it is absolutely out of the question for them to receive, and on the other hand, for representatives of manufacturers to decrease wages beyond the rate at which an amicable settlement could be reached. If there is likelihood, and there may be grounds for such anticipation, that costs of living will continue to decrease during the coming year to points considerably below the present levels, then it would seem at least good policy to impose the sliding scale so as to bring the ultimate decrease gradually into effect rather than to strike bottom without any intermediate breaks, and have the greater likelihood of serious sprains.

A year ago there was little or no difficulty in getting to a satisfactory arrangement, as the industry was in a profitable condition and employees were generally contented. When the mills could afford to increase wages, there was practically no difficulty on either side. That was a fat year, but, contrary to the plan of Joseph and Pharaoh, the government did not permit all the excess to be stored against the lean year which is now upon us. Consequently there is not sufficient reason to continue the old ration any longer. The situation at present is much more difficult and it seems that only by the fairest and most generous agreement on both sides can the usual happy relations be maintained and the mills employing union labor kept in operation.

ENJOYED "THE GRAY TERROR".

In a letter to the Editor, a reader says:

"I read with great interest the very clever little story emanating from the pen of Mr. Dawe. It certainly makes good reading, and the author deserves a lot of credit for trying to make people realize just how important paper really is. As I was reading the story, there came a thought which would perhaps be worth recording in your Cobwebs column. It is indeed fortunate that Mr. Dawe did not place the scene of the story in some manufacturing city in Germany, where a goodly proportion of the population wear paper clothing! The explosion would have been still more disastrous! And how about the ladies wearing cellulose silk hosiery?"

COBWEBS.

There is also satisfaction in reading of the good work that pulp and paper men are doing in rendering service to the public outside of their business. An instance of this generous endeavor to make Canada a better place to live in is the service of Mr. F. B. Whittet, Treasurer of the Riordon Company, as President of the Shawbridge Boys' Farm and Training School. The work of this institution is well known for its success in setting on their feet and on the road to honest productive labors, many boys who have momentarily slipped on the pathway of life.

Ontario seems to know pretty definitely what is to be done with booze. Half way measures will not work. The Ottawa River divides two regions as distinctly different, in this regard, as those separated by the Rio Grande. It is up to the people of Ontario and Quebec to comply honestly with the laws of each province and give the world a chance to know which system really is the better.

It has been intimated that one reason why the Canadian Government is anxious to send a representative to Washington is because money has been appropriated for the purpose and ought to be spent. Any government that has such an item on his books should be proud of it.

There is a great fight on in England over the proposed import duties on paper. Apparently tariff protection is the only means available for stimulating the British industry, which is in a very run down condition. Paper makers are tied up—and down—with contracts for high priced pulp and large supplies, so that countries making their own pulp are converting it into paper and dumping it in England at prices that threaten to annihilate the British mills. We hope they get a proper tariff, even if it means a more difficult market to sell in.

Mr. Walter J. Raybold, the new president of the American Paper and Pulp Association, is secretary of the B. D. Riding Paper Co., the first mill in which the editor worked. We are greatly pleased with the honor conferred on a good friend but must disclaim any responsibility for his election.

SOME FINE ISSUES.

The Convention Numbers of the American paper journals are fine examples of trade literature. The editors and publishers are to be congratulated on the excellence of these special numbers and the amount of advertising. They show the importance of the industry.

NOT OUR HOWARD.

Mr. Tarzan Jones was sitting down to breakfast one morning when he was astonished to see in the paper announcement of his own death.

He rang up Howard Smith at once. "Halloa, Smith!" he said. "Have you seen the announcement of my death in the paper?"

"Yes," replied Smith. "Where are you speaking from?"—London Telegraph.

The New Hall Process of Grinding Pulp.[*]

Report of the Groundwood Committee, T.A.P.P.I.

By W. A. MUNRO, Chairman.

The Groundwood Committee has investigated a subject, "The Hall Process of Grinding Wood," that has marked one of the greatest steps forward in the scientific manufacture of groundwood pulp. This process is known to some extent by all groundwood pulp manufacturers; some have a clear conception of what it accomplishes, while others have but a hazy idea of the subject and no definite working knowledge of it.

The Groundwood Committee has based the material and the statistics in this report entirely on a questionnaire sent to the mills operating under this process, and has endeavored to present the subject from three angles, that of the grinder room, the paper machine room and the press room.

So far as we can discover, any effort to improve groundwood, or the methods of making groundwood, that can be connected with this process, dates back only to 1914. To be sure there were spasmodic efforts made in this direction from time to time, but until that year, there appeared no one with sufficient zeal or initiative to inaugurate a sufficiently broad series of experiments to insure the finding of the "Better Way," if such a way were in existence. The first thought along this line concerned the preparation of the wood to be ground, and a tank was rigged up for the purpose of steaming or boiling it before grinding, and at the same time a great deal of thought was given to the subject of varous types of burr, and the influence of certain burs on the quality of the pulp, particularly with respect to the fiber length.

It may be of interest to note that the suggestion to groove the stone came first in an entirely accidental manner. It was observed one day that certain of the pulp-grinding stones, as they came from the quarry, were dressed differently from the others. This dress evidently put on by a tool working across the face of the stone and parallel to the shaft on which the stone would be hung, seemed to leave the face of the stone in the shape of flat-topped ridges, and from this suggestion there eventually worked out a burr, the action of which was to shape these ridges, and to separate them by grooves. In actual practice it was found that these grooves performed a most important function, namely, that of providing a recess in which pulp ground under one pocket could escape regrinding under the other succeeding pockets, thus preserving intact the particles of fiber so necessary to the formation of a perfect sheet of paper.

With these two ideas coordinating, namely the preparation of the wood by boiling and the use of a marker or grooving burr crossed with an 8-cut spiral burr, the first working experiment was made at the mill of the St. Regis Paper Company in September, 1914, with the result that about twenty-five tons of paper were made without the addition of sulphite to the groundwood. This pulp ran well on the machines and had a good pop test. That it ran equally well on the presses is attested by the fact that it went through without any criticism, and it will be remembered that in 1914, publishers were not inclined to withhold criticism where it was thought due. It was found, however, that the additional labor involved, the expense of live steam, etc., rendered the boiling process too expensive, that even though sulphite could be dispensed with wholly or in part, there was no important money saving effected, so the practice of boiling the wood was discontinued, and the attention turned wholly to the grinding of the raw wood, keeping in mind the fundamental idea of preserving the fiber length as much as possible. This practice proved so successful that important reductions were made possible in the amount of sulphite used.

About this time important changes in the control of the St. Regis Company had the effect of transferring the field of experiment to the Taggart Mills, owned and operated by the late Mr. George C. Sherman. Here the same general effect followed the introduction of the burrs and practice inaugurated at the St. Regis mill.

Soon after, these burrs and their system of operation were introduced into several other mills which we will designate as No. 1, 2, 3, etc.

No. 1. Here the demonstrator used the ¾ marker and crossed it with an 8-cut spiral.

No. 2. Used ¾ marker and the 8-cut spiral but determined to dispense with the marker temporarily, using instead of the marker, a 14-diamond.

No. 3. The same as number two. From this point on the marker and the diamond were generally used. It was found afterwards that a more even grade resulted from the use of the No. 4 marker and the diamond than from the spiral burrs.

To obtain the largest possible amount of real usable fiber from each block of wood should be the aim of every progressive pulpmaker. When he has accomplished as much as he can along this line he can still strive to obtain the maximum production from each stone, from the horsepower available, and from each dollar of payroll.

The Hall process enables the pulpmaker to approach the first goal closely. He can keep the surface of each grindstone in such a condition that a very large part of its surface is in active grinding condition. He can also keep this grinding surface smooth, thereby eliminating the production of slivers. Still further he can keep this smooth surface open and free from glazed spots, thus eliminating the production of very short fine fibers or flour. In this way the two sources of loss are controlled and the result is a close approach to the largest possible yield of pulp from the wood used.

From another point of view, the paper machine can be run faster and safer with this pulp than with pulp that is constantly varying in freeness over wide ranges. The sheet made from this pulp is easy to press out and consequently easy to dry. The supplying of the paper machine with more uniform stock cuts down the number of adjustments that the machine tender has to make to meet varying stock conditions. This permits him to pay more attention to the mechanical condition of his machine which is very necessary in these days of running machines much above the speeds for which they were designed.

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[*] Report presented at the annual meeting of the Technical Association of the Pulpwood Paper Industry, New York, April 11-14, 1921. See also Pulp and Paper Magazine, Sept. 5, 1918.

The grinder room is the only place affected when installing the Hall process, and here only a few changes are required, such as raising the stock dam to deepen the stock pit, and equipping the grinders with a doctor board to prevent the stock from being carried around with the stone. There is no need to change the original layout of the groundwood mill. The dressing put on the surface of the stone is the most important feature of the process, as this is what does most to produce the long, strong and uniform fiber desired.

First of all, the pulp stone is trued up until it is perfectly round and free from sand holes or other imperfections. Then the pattern is applied by means of a special flat bottom burr and a diamond burr. A heavy impression is never put on the stone, light and frequent dressings being the rule. No fixed schedule is worked out, each stone being studied for its hardness and ability to retain its pattern and sharpened when necessary. Not more than a fifth of all stones are sharpened at one time.

It was found by your committee that the effect of the Hall process varied with different mills, but all reported that this process produced beneficial results. The degree of success depends entirely on the man in charge of the groundwood mill and how closely he watches the stones and the resultant pulp.

One mill reported a saving of 50 percent in the amount of sulphite used. They had formerly used 27 percent and under this process they were using but 13 percent. They also reported an increased grinder room production and a greater yield from a cord of wood.

Another mill reported a saving in sulphite of 25 percent and an increase in paper machine production.

Another mill claimed that by running their grinder room under this process, they could grind wood with an expenditure of but 54 horsepower to a ton and could use but 14 percent of sulphite on their paper machine.

Still another informed your committee that they could run for weeks on a wholly groundwood sheet and that their percent of sulphite never ran above six.

The installation of this process by mills using groundwood in either small or large proportions in the manufacture of paper would increase materially the amount of paper from a cord of wood and in that way, conserve the stumpage of this country and lessen the amount of cut needed to supply our mills.

This saving in wood or stumpage is accomplished in two ways: First, by decreasing the use of sulphite, which takes approximately two cords of wood to each ton of pulp produced, or more than twice as much wood as is needed to produce a ton of mechanical pulp. Secondly, by obtaining a higher yield from a cord of wood under this process than by any other system or process.

In the case of the reduction in the amount of sulphite, and the consequent saving in wood a 100-ton newsprint mill formerly used 25 tons of sulphite daily or 50 cords of wood. The use of this process cut the sulphite consumption in half. As a result only 25 cords of wood were needed to make the required amount of sulphite.

The groundwood mill formerly had a yield of 2,100 lb to the cord (rossed) and 1,820 lb to the rough cord. After installing this process the yield was 2,350 lb to the rossed cord and 2,000 lb to the rough cord.

Wood used before installing this process:

50 cords to make 25 tons sulphite.
83 cords to make 88 tons groundwood.
133 cords used in manufacture.

Wood used under the Hall Process:

25 cords to make 12½ tons of sulphite.
88 cords to make 88 tons of groundwood.
113 cords used in manufacture.

This saving of 20 cords a day amounted to over 6,000 cords in the course of a year and comprised 15 percent of the company's total cut.

Besides this saving in wood, there are several other factors that add to its value. First, there is a slower depreciation of the woodlands. Second, there is less labor cost per ton, due to the smaller amount of wood to be handled. Third, greater grinder room production with the same equipment and horsepower.

However much these might amount to, the greatest saving or the ultimate effect of the process would be, that every seventh year the mill could be operated without any expense for wood.

The reduction in sulphite by the substitution of this groundwood does not reduce the quality of the paper in any way, rather it seems to improve its running qualities on the presses. There are a number of press room superintendents who express a preference for paper made under this process with a low percent of sulphite.

One has informed your committee that the paper received at their press room made under this process, ran better than usual run of paper. It had a better finish, took ink better, was stronger, and had more stretch.

Another expressed himself as follows: "We have during the past year and a half used in our pressrooms considerable paper made under the Hall process and can say that the results obtained in regard to the running, printing and general service of this paper has been satisfactory in every way. In fact it has been much more satisfactory than some of the paper which is made according to the regular standards of grinding wood and using sulphite as carried on in most of the newsprint mills in the country."

It is of the utmost importance in the Hall process of making groundwood, that the process be watched closely; when this is attended to, the results obtained in making paper when the stock goes to the machines are very satisfactory indeed, from the pressroom standpoint. If the pressrooms through the country could have paper made under the Hall process, with the system carried out correctly, and other conditions being right, the results would be satisfactory to publishers in general.

It is stated that an official report of the union vote will be made to the manufacturers' committee at a meeting next week, and further efforts will be made to bring about a settlement. Among the six companies whose agreements will expire on the 1st May is one Canadian concern, namely the Fort Frances Pulp and Paper Company. Among those whose agreements will expire on the 11th May are the following Canadian companies: the Abitibi Paper Company, J. R. Booth, Ltd., the E. B. Eddy Paper Company, the St. Maurice Paper Company and the Spanish River Pulp and Paper Mills.

British Trade News

(FROM OUR LONDON CORRESPONDENT)

London, 11th April, 1921

Strikes, and rumors of strikes,—and discussions and conferences on them—are the principal topics in England today. The railroad men and transport workers made a statement that they would support the coal miners if some sort of terms were not soon fixed up and the Government retaliated by calling up a section of the Army and Navy reservists to deal with current events while volunteers were asked for to act as defence units. This move on the part of the Government had a great moral effect on the strikers and would-be strikers as it not only called men away from the paper mills but it touched the miners and the railroad men. Now, it is stated, there may be no triple strike and there is every chance of a settlement with the miners, who have succeeded in some cases in damaging the pits by water, or preventing pumping operations to be carried on. In the case of large paper mills they have from 2 to 3 weeks supply of coal and the smaller ones, such as those in the South of England, can carry on for at least six weeks. The slackness prevailing in the industry will help to eke out the coal supply, so that looking round generally the papermakers have not yet fully felt the coal strike, but a rail strike would be more disastrous to them.

Papermakers and Protection.

I have dealt fully elsewhere with the suggestion that paper should come within the scope of the Anti-Dumping Bill. It is a burning question here at present and very few papermakers came to the assistance of Mr. Stanley Cousins to help him out in his contention, which is feasible, sensible, and fair when it is read in the "Pulp and Paper Magazine." What is the use of running an industry when the products of it are sold under cost price? That's the position in England today under a Free Trade scheme, but Mr. Cousins is only in favor of putting a duty on imports from such places as Germany. Why? Canadians who have followed my notes from time to time on Germany will remember that in November last I wrote the German could buy his pulp in Finland at 150 Marks to the English sovereign (the Mark today is 2 cents and the sovereign is worth 250 Marks) and dump it down in England at 240 marks to the sovereign. He consequently could buy pulp cheaper and at lower wages produce cheaper paper than the British. It is this rate of exchange Mr. Stanley Cousins is "dead against" and he rightly says it is not fair trading. But the consumer does not care a frazzle. He wants paper for nothing, yet he wants to see a thriving industry. He is like some of the writers on paper subjects who say: "We are all Free Traders personally and Anti-Dumpers on the broad issue." It is very hard to convince people like this who put up for consumption such views when 26,201 workers are idle and 16,153 only partly employed in the paper mills. They go the way the wind bloweth them.

Lord Beaverbrook's Reply.

Lord Beaverbrook contributes a letter to the newspapers in which he says: "....But I may add that if I had to choose between a general allround tariff and the amazing proposal of the Anti-Dumping Bill to put a duty simply on debtor countries, I should unhesitatingly prefer the former plan. It is at least an understandable one, and if it did some harm might also do some good. But the duty on goods from debtor nations only cannot conceivably do any good to British industry while it is bound to cause a general disturbance in the world's newsprint market." Towards the end of last year Mr. Wm. Harrison, of the Hartlepools Paper mill after a trip in Germany studying conditions warned the British papermaking interests that the German was a very wily manufacturer and he would take advantage of the rate of exchange for the purpose of dumping cheap paper on the British market. And, added Mr. Harrison: "I for one am going to take good care that the papermakers of this country combine together, if necessary, to stop this dumping if it ever takes place...." This was the warning sounded last October and Mr. Cousins is now only asking that the British papermakers be protected against such tactics in countries where the money markets were in a turbulent state.

A Sellers View on Dumping.

A leading merchant says that dumping is not the fundamental cause of the acute position prevailing in the British paper trade. It is a factor, of course, as regards newsprint, Scandinavia and Findland in particular being the most serious shippers. Measures to prevent dumping might afford temporary relief to mills producing newsprint but an embargo on foreign newsprint opens up serious possibilities of retaliation, for Scandinavian countries might impose a tariff on pulp which would hit our mills severely. The root causes of the serious depression and unemployment in the trade are trade inactivity and lack of steady orders. These, however, are the views of a merchant. Scandinavia would think twice before tampering with duties on pulp because Canada is a sore thorn in her side. If there was more British capital invested in the Dominion for the production of pulp and more consideration given to the war motto "Trade within the Empire" there would not be all this talk today about what Scandinavia could do or would not do. This is a time for action—deeds, not words—and the sooner the British papermakers waken up to the fact the better for themselves. Indeed, they are out now to fight such bodies as the Newspaper Federation, who, after reading Mr. Stanley Cousins appeal to Parliament, passed a resolution as follows: "The Newspaper Federation views with apprehension the possibility of the inclusion of newsprint in the articles subject to the provisions of the coming measure for the safeguarding of industries, and draws the attention of members to the importance of making known to the members of Parliament of their area the serious consequences of putting their raw material in jeopardy of a duty of 33 $^1/_3$ per cent." This resolution is passed by sane businessmen who don't care what may happen to an industry while they get their newsprint at a price less than the cost of production. As a matter of fact they have not yet forgotten the high price they had to pay in war time. They will never get over the experience and they look on the paper manufacturer with a certain amount of suspicion today.

Notelets.

A portion of the machine house roof and other serious damage was done by a fire which broke out a few days ago in the Clyde Paper Mills, Rutherglen.

The Technical Section of the British Papermakers Association is going strong and papers being read are numerous. This week there will be an open conference in London.

Transactions of the Technical Section

INVESTIGATION INTO SPECIAL BRONZES.

(Continued from last issue.)

For the alloys containing less than 5 p.c. lead the "elbows" which in the cooling curves correspond to the points of the second critical surface are not pronounced enough (on account of the small liquid mixture rich in lead which begins to segregate at the corresponding temperatures) to allow of their being determined experimentally. So that we have not been able to draw the prolongation, towards the left, of the curve θ: although knowing (as is easily understood) that it must reach the point M. — The complex shape of the second critical surface must be approximately that indicated in Fig. 2 by light dotted lines corresponding to parallels of the surface itself.

From the significance found for the third critical surface (horizontal plane at 770 deg.) it follows at once clearly what significance must needs be attached to the fourth critical surface (horizontal plane at 550 deg. — corresponding to the critical points of column IV, table II.)

It is evident in fact that the lags found at 500 deg. in the cooling curves of the alloys in which the preceding lags at 770 deg. proved the formation of the solid β solution are due to the formation in the "solidus" of the same binary eutectic mixture (copper-tin) with 26 per cent tin which forms in the binary copper-tin alloys at the intersection of the second curve-limit of the first miscibility gap in the solid state (OS in our diagram) with the first curve-limit of the second gap (QS in our diagram). The constant temperature at which is found the fourth critical point for the alloys of different compositions, and the fact that it appears only for the alloys, which show the third, corroborates our interpretation of the third critical surface, and proves still better that the solid a solution which crystallizes first from the ternary alloys of the series under consideration does not contain any lead. As to the fact that in the alloys with compositions nearer to line NA the fourth critical point does not manifest itself, this is due solely to the small amount of heat evolved in the formation of the eutectic mixture S: it is known that it is found true even in the binary copper-tin alloys.

Table II, Part 2.

No. of sample	III Critical Point (lag) Temp.	duration of lag in minutes	IV Critical Point (lag) Temp.	Duration in min.	V Critical Point (lag) Temp.	Duration in min.	Remarks
8	—	—	—	—	—	—	
9	761°	1'	—	—	—	—	
10	763°	3'	—	—	—	—	
11	770°	5'	500°	1'	—	—	
12	770°	7'	500°	2'	—	—	
13	768°	12'	500°	3'	—	—	
14	—	—	—	—	—	—	
15	—	—	—	—	—	—	
16	763°	3'	500°	0'.30"	—	—	
17	—	—	—	—	—	—	No. 17 The great variation in the percentage of tin is due to the fact that from the alloy mass there separated a small button containing 25.2% tin and 3.7% lead.
18	—	—	—	—	—	—	
19	768°	3'	—	—	—	—	
20	770°	7'	500°	1'.45"	310°	very short	
21	—	—	—	—	319°	"	
22	763°	1'	—	—	319°	"	
23	770°	3'	—	—	319°	2'	
24	762°	6'	500°	1'	319°	very short	
26	—	—	—	—	319°	"	
26	762°	2'	500°	1'	319°	"	

Finally, if we try to find out the interpretation of the fifth critical surface (values in column V of our table) corresponding to an isothermal transformation, which takes place at a constant temperature (about 319 deg.) in alloys of various compositions, we see at once that on the basis of these characteristics and taking into account all we said at first we must admit that the breaks in the cooling curves corresponding to the points of this surface are due to the solidification of the lead separated out from the various molten alloys along the surface of incomplete miscibility of the three metals in the liquid state.

This being granted, we reproduce the micrographs of two of the ternary alloys examined by us in order to show how their structure corroborates our interpretation of the various elements of the equilibrium diagram. We confine ourselves to reproducing the micrographs of the two alloys only, because observation proves — as could have been easily foreseen — that two different types of structure present themselves only in correspondence to the two different courses of crystallization defined above for the alloys in which the solid β solution appears. But for all the alloys in which the saturation limit of the a solution[12] is not exceeded the structure is entirely analogous to that (already examined by a few experimenters) of the binary copper-lead alloys. In these the free lead fills the interstices of the mixed a crystals[13].

Hence, confining ourselves to the alloys in which appears the solid β solution (containing, namely,

Table III

Sample No.	Composition of the alloy Sn %	Pb %	Hardness Number	Sample No.	Composition of the alloy Sn %	Pb %	Hardness Number
1	4,6	0	49	17	4	6,9	46
2	8,8	0	63	18	3	6,9	69
3	16,3	0	77	19	13.9	7.0	80
4	26,9	0	230	20	2,4	10,6	39
5	0	10	27.2	21	8	10,4	48
6	0	20	23,8	22	13.9	10,4	86
7	0	40	13.8	23	4,1	24,12	39
8	4,1	0,95	57	24	9,2	16,3	57
9	8,1	1,1	67	25	19.8	5,0	130
10	14,1	1.15	83	26	20,4	8,8	130
11	3,9	3	46	27	21,5	8,05	150
12	7,8	3,2	61	28	11.0	5.0	70
13	13,9	3,1	83	29	17	5,0	109
14	3,99	5,0	46	30	5	20	44
15	8,0	5,0	61	31	24	5	182
16	13.7	5.1	93	32	12	20	70

amounts of tin greater than those corresponding to the points of line N A in the diagram of Fig. 2). We have said already that their crystallization takes place differently according as their composition corresponds to points that fall inside or outside of curve *d*, intersection of the second and third critical surfaces. It is easy to foresee why in the two cases even the structure of the alloys must be different.

In fact, in the first case — in which we have seen that the line traversed during the cooling by the representative point meets at first curve S corresponding to the limit of perfect miscibility in the liquid state and then moves along this line while at the same time there takes place the segregation of the mixed *a* crystals, and of the liquid rich in lead; and only after this course does it meet curve *e* in point O at which the solid β solution begins to form — it is obvious that in the cooled alloy there must appear the free lead mixed with the masses of solid solution.

This is evident in micrograph 1 of the accompanying plate which corresponds to alloy No. 23 of our table 2 — 14 p.c. Sn: 15 p.c. Pb — Treated with 50 p.c. nitric acid — Magnification 200 diameters.)

In this alloy (which belongs to the first type as in its cooling curve there appear the second elbows) may be seen the black lead masses enclosed in the solid *a* solution.

On the other hand in the second case — in which the representative point meets first the line *e* corresponding to the formation of the solid β solution; and it does not meet the line *d* until after having moved along *e* itself — it is obvious that the free lead must be found enclosed in the β solution.

This in fact appears quite evidently in micrograph 2 corresponding to alloy 13 in our table 2 (24 p.c. Sn: 5 p.c. Pb. Treated with 50 p.c. nitric acid. Magnification 200 diameters.) In this alloy (which belongs to the second type as its cooling curve does not show the second bend) the black masses of lead are seen (smaller than in the preceding one on account of the smaller amount of lead contained therein) scattered through the white borders (streaks in the eutectic) of the solid β solution.

The same types of structure are found in all the other ternary alloys examined by us: in these the free lead appears always enclosed in the *a* solution or in the β solution according as the alloy belongs — by its composition — to the first or second group. The various alloys of the same group differ among themselves only in the varying proportions of their constituents, viz. of *a* solution, of β solution (with the eutectic mixtures to which it gives rise according to the processes already examined for the binary copper-lead alloys) and of free lead.

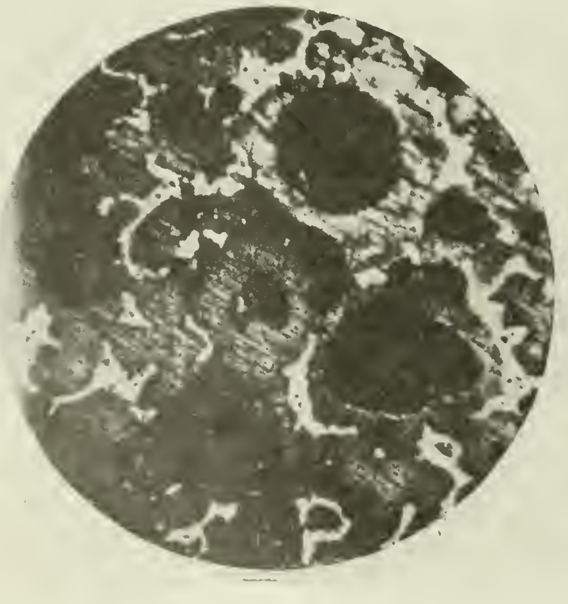
Having determined the conditions[14] of equilibrium and the structure of the ternary copper-tin-lead alloys, we started a series of investigations into their mechanical properties. While we reserve the publication of these investigations for the future — which will require a good deal of time to be completed, particularly with regard to the mechanical properties of the lead bronzes tempered under various conditions — we give in Table 3 as complementary to the data above the results of a first series of hardness tests carried out according to Brinnels method with the binary and ternary alloys dealt with in the preceding pages.

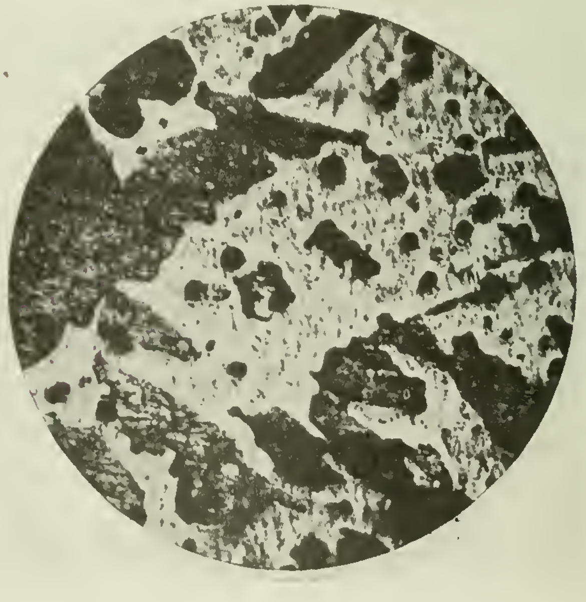
The tests were performed with a ball of 10 mm. diameter under a constant pressure of 500 kilograms: the hardness numbers were calculated by the usual formula of Brinell.

On the basis of the results given in the preceding table we constructed a gypsum model the photographic reproduction of which we give in the plate.

In this model the altitudes of the segments cut from the upper surface on the perpendiculars to the base plane are proportional to the hardness numbers of the various alloys whose composition corresponds — in the usual manner — to the points of the base triangle at which the above mentioned perpendiculars are erected. In our model the anterior (shaded) face corresponds to the binary copper-tin alloys (No. 5-7 in Table 3); the elbow formed by these two faces corresponds to pure copper.

From the examination of the model and of the numbers in Table 3 which, in order to facilitate comparisons, refer to various series of ternary alloys, in each of which the lead percentage has been varied, while maintaining as constant as possible the tin





Photomicrograph 1.

Photomicrograph 2.

(Note: These pictures are reproduced from photostat copy of original, hence light and dark portions are reversed.)

percentage, it follows that the presence of lead does not affect considerably the hardness of the copper-tin alloys containing less than 14 p.c. tin. For this series of alloys the decrease of the hardness due to lead is not considerable unless the proportion of lead exceeds 10 p.c. This result deviates a little from those obtained by Guillet (loc. cit.). He says in fact that the hardness of the ternary alloys decreases rapidly with the increase of their lead content when this content begins to exceed the value of 3 p.c.; but it remains constant when the limit of 7 p.c. lead is exceeded.

However it is well to bear in mind that Guillet experimented with alloys still containing small quantities of zinc and confined his investigations to alloys in which the percentage of tin only varied a little from 10 p.c. (between 8.52 p.c. and 10.28 p.c.).

For the alloys containing more than 14 p.c. tin and above all for those containing little lead (less than 5-6 p.c.) the hardness on the other hand decreases rapidly with the increase of the lead content. This observation can easily be reconciled with the fact (already demonstrated) that on these alloys (and particularly) when the proportion of lead accumulates almost entirely in the solid solution (see phot. 2) contributing thus towards decreasing the hardness of that constituent whose prevalent function it is to impart this property to these alloys.

FOOTNOTES.

1. Work reproduced in Revue Générale des Chemins de fer, 1893.

2. V. Giolitti and Tavanti: On the tin-copper alloys (gazette chimica italiiana, 38, 1908, pp. 209-239.)

3. As a matter of fact, the hard constituent is largely formed from the solid β solution which forms at 790 deg. and only to a slight extent from the eutectic mixture which forms at 500 deg. and 480 deg. through the segregation of the solid solution itself.

4. The constitution of copper tin alloys: Jnl. of physical chemistry, 10, 1906, pp. 630-653.

5. It is known that in recent times the more accurate study of the lead and tin alloy led to the introduction of various new elements in the equilibrium diagram of the system formed by these two metals.

6. Giolitti and Tavanti, Gazz. chim. ital., 38, 1908, p. 209.

7. According to Guillet's data ("Industrial study of metallic alloys", appendix, p. 1906), the first equilibrium diagram of the binary alloys copper-lead determined by Roland Josselin was afterwards found by Roberts-Auster to be entirely wrong. The latter drew up a new diagram which (with the exception of the values of the temperatures and of the concentrations corresponding to the critical points) is in its general form quite similar to ours. Our data, however, are nearer to reality.

8. V. Gioliti and Tavanti, loc. cit.

9. As is known, this second surface cannot be drawn by points by means of thermal analysis: we can only say that it passes through point 1 and intersects surface AEFGH along the same curve which represents its intersection with the second critical surface $L\gamma O$.

10. In Fig. 3 are plotted in the usual manner the points corresponding to the composition of the various alloys examined. At these points have been erected segments perpendicular to the plane of the drawing (horizontal plane through N in Fig. 2) of a length proportional to the durations of the corresponding lags noted in the cooling curves. (See table 2, column 10.) Selecting various systems of points located on the same straight lines, the vertical planes passed through them have been assumed as brought down on the plane of the drawing. It is evident then that the intersection of the point system in question with the extremities of the vertical segments is a point of the curve of intersection of the horizontal plane through N with the surface of the durations of the isothermal conversion at 770 deg. in the sense introduced by Tamman. In this manner line AB has been drawn.

11. When allowance is made for the inaccuracies caused by the unavoidable phenomena of incomplete equilibrium between mixed crystals and liquid residue, due to the too rapid insufficient slowness of cooling.

12. That is, in so far as the field examined by us is concerned, the alloys containing less than 7 p.c. tin, in which the break of the temperature at 770 deg. corresponding to the formation of the β solution does not take place.

13. We do not deem it necessary to reproduce micrographs of alloys of this series, as there are many reproductions thereof in the works of other experimenters, such as Charpy's on lead bronzes.

14. As appears from the data referred to in the course of this memoir, we confined ourselves to investigating the lead-copper-tin alloys in the cases where the rate of cooling is sufficiently slow to insure our having practically reached the conditions of perfect equilibrium. We are running now more examinations (by means of more or less rapid "tempering" processes) of the phenomena of imperfect equilibrium which are as important for these alloys as for the binary copper-tin alloys.

15. Guillet explains this last observation assuming that — on account of the liquation phenomena found in lead bronzes — the lead itself accumulates in the interior zones and at the base of the ingots, maintaining itself in their central zones at a concentration of 7 p.c. even when its proportion in the molten alloy exceeds this value; and as it is from the center of the ingot that the samples for the mechanical tests are taken, Guillet's assumption would explain the constancy of the results of the mechanical tests performed on the alloys of different composition containing more than 7 p.c. lead.

Leaving aside the fact that some chemical analyses performed on the samples themselves used for the mechanical tests would have enabled us to determine at least the accuracy of Guillet's hypothesis. The fact remains that the results of our analyses (see Table 2, columns 5 and 6) do not lead to the assumption, not even for the alloys containing 12 p.c. lead, of such intense liquation phenomena as assumed by Guillet. Moreover, the same conclusion results from the microscopic examination of the entire longitudinal section of the various ingots.

16. In which case the solidification of the alloy takes place clearly according to the process designated as "first case".

Note: A few reprints of this article will be available, the number depending on requests received by May 5. If you want one, please order promptly.

The Rinman Modification of the Sulphate Process.*

By BROR. N. SEGERFELT.

For many years the Engineers in the cellulose industries of Sweden have carried on extensive investigations for the purpose of obtaining an increased amount of by-products from waste liquors. Among the well known men connected with this work may be mentioned Hugo, Wallin, Ekstrom, Prof. Klason, Sandberg, Strehlenert and Rinman.

Up to date Mr. Rinman has met with the greater success. Having had direct connection with the operaton of the mills as well as the laboratories has given him excellent opportunities to carry on experimental work. At the beginning of his investigations he was convinced that if the same quality of pulp could be obtained by using caustic soda instead of salt cake he would then have taken a step forward on the road to success. As a result of many years of hard labor he finally devised a method of cooking whereby even better results were obtained by the use of caustic soda than with the salt cake and in his connection with several mills in Germany making pulp from straw, he demonstrated this fact on a commercial scale to the satisfaction of everybody. His methods were later adopted in several sulphate mills in Scotland and Sweden where kraft pulp was being made from wood.

Following are extracts, from some of the Rinman patent claims, as well as explanations of the advantages and results from the Rinman process.

(1) A method of producing cellulose by cooking the wood with weak caustic solution with the aid of a reducing material, preferably mercury.

(2) That the main operation is done at a temperature not exceeding 170 deg. Cent.

(3) When the cook is finished the pulp is washed in ordinary diffusers and the black liquor passed to evaporators and evaporated to about 35 deg. Bé. at 60 deg. Cent.

(4) To the evaporated black liquor is added a sufficient amount of fresh caustic soda to compensate for losses, also lime is added.

(5) The mixture is now placed in a retort for dry distillation and distilled at not over 500 deg. Cent. In order to obtain the highest yield of acetone, methyl alcohol and oils, a small amount of steam is admitted to the retort.

Besides the above mentioned by-products, fuel gases and coke are also obtained. The fuel gases are used direct to heat the retort; the coke is burnt in a rotary burner and the ash dissolved in water, the sludge of lime separated and fresh liquor obtained for cooking purposes.

Advantages of the Rinman Method of Pulping.

The bad odor is entirely eliminated.

The yield of pulp from the wood is as high or higher when the Riman method is used than when the ordinary sulphate method is employed and a better quality is obtained.

There will be no hard scales on the heating surfaces of the evaporators or concentrating apparatus because we operate under low temperatures without the use of smelters where silicates are usually separated out.

The loss of alkalies is only about 2 per cent to 3½ per cent of the pulp produced, while by the sulphate process 10 to 25 per cent is lost. This great difference is due to the fact that the high temperature in the smelters used in connection with the sulphate process carries a large quantity of the alkalies up through the chimneys.

The lime consumption in the Rinman process is less than in the sulphate, only about 10 per cent of the air-dry pulp being required.

At a test made at Gryksbo, Sweden, the following results were obtained:

	Rinman Method	*Ordinary Sulphate Method*
Breaking length	7678 meters	7554 meters
Stretch	4.47 per cent	4.72 per cent
Yield about	50 p.c. air-dry	38 p.c. air-dry

Bleachability tests made at Skoghalls sulphate mill, Sweden, have shown that a clear white pulp can be made having a bleachability of 15.5 per cent and a yield of 39.3 per cent from bone-dry pulpwood.

The Rinman process is very flexible. It is quite possible to produce any quality of pulp desired simply by varying the cooking.

By-Products Obtained in the Recovery Process.

From one ton of pulp (2,240) pounds we obtain approximately the following:

Methyl alcohol	50 lbs.
Acetone	50 lbs.
Oils suitable as substitutes for gasoline	100 lbs.
Heavy oils (boiling point 150 deg. Cent.) ..	200 lbs.

The wood used in the foregoing tests was similar to the American white pine and jack pine.

By employing the Rinman method in making pulp from straw and grass the approximate yields are as follows:

Methyl alcohol	24 lbs.
Acetone	50 lbs.
Light oils	100 lbs.
Heavy oils and a varying amount of ammonia	200 lbs.

When tropical grasses are used, from 10 to 20 lbs. of paraffin is obtained having a melting point of 68 deg. Cent.

The oils, usable for the same purpose as gasoline, consist of ethyl methyl ketones, higher alcohols, and ketones and hydrocarbons. The specific gravity of these oils is about 0.81 and owing to this fact this oil has higher efficiency than gasoline, the oils are suitable for the same purposes as gasoline. The oils used in Diesel engines consist mostly of hydrocarbons with a boiling temperature higher than 150 deg. Cent.

Apparatus and Machines.

The mechanical equipment for a Rinman recovery plant is in use as pointed out before, in straw mills in Germany, but there is also one mill just starting, manufacturing Rinman kraft pulp from wood. The results from this will not be known until May or June. Also in Scotland one soda pulp mill is being changed to adopt the Rinman method.

The Rinman process is more especially applicable to the soda mills because the entire equipment can with some slight changes be made use of. It is quite evident, however, that even the sulphate mills can adopt this method to great advantage. The bad odors from sulphate mills are generally considered a public nuisance; in fact, instances have occurred where injunctions have been served on mill owners to stop the operation of their mills. But while the writer does not consider this a serious matter, he certainly feels that other merits of the Rinman method will warrant the sulphate engineer giving it a most careful investigation.

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* Communication to the Technical Association of the Pulp and Paper Industry for the Annual Meeting in New York, April 11-14, 1921.

British Makers of Newsprint Seeking Protection.

(Special From Our London Correspondent).

London, April 8, 1921.

Makers of newsprint in the United Kingdom are being placed in a jeopardised position—in fact some are already in it. And as I write a big "fight" is raging on paper as to whether papermaking in this country should be protected against Foreign imports, or, go on as we are going at present. It is a fight between the "Protectionist" and the "Free Trader", the producer of newsprint and paper in one part and the consumer in the other. In other words the Free Trader is a gentleman who wants an open competitive market in the United Kingdom where all countries can send their products, while the Protectionist gentleman says it is possible to tax the foreigner by an import duty and to make him pay toll for access to our markets. That is the difference of opinion between them politically. But the papermakers—and I know there are "Protectionists" and "Free Traders" amongst them —say we are in the position today that raw materials are so high in price we cannot sell paper at the same price newsprint and other qualities are being sold by Foreign producers. "Do you want to kill our industry?"

Naturally one might ask: How has all this difference of opinion arisen? Well, it has arisen over a measure before the Imperial Parliament which is known as the "Anti-Dumping Bill". It was to be debated this week, but owing to the present coal miners strike the debate was adjourned to next week.

Stanley Cousins Hits Out.

One of the best known Directors of British paper mills, Mr. Stanley Cousins, started the ball rolling in the present paper fight and controversy; but one would like to hear what he had to say in regard to raw materials, such as pulp, the imports of which the industry has to depend on. The Free Trader says: "If you put it on paper the Foreigner will assuredly get the import duty back on pulp." Mr. Stanley Cousins, however, realising that the position was becoming critical addressed the following letter to the London "Times" and it had a remarkable effect:—

"Sir—The critical position of the papermaking industry in Great Britain is shown by latest Government figures of unemployment. Out of 48,000 employees in British paper mills 26,201 are totally unemployed and 16,153 are on part time.

"This is brought about principally by dumped imports from

Finland . . . . Sweden and
Germany . . . . Norway

The depreciated German and Finnish currencies enable mills in those countries to quote prices delivered in England which are far below the manufacturing cost of British mills. Great Britain is the only market at this time, so manufacturers in Norway and Sweden are obliged to meet these low quotations and our home mills have been forced to shut down by this increased flood of imports.

"British mill owners, who realize the serious position of the industry, have reduced their contract prices to British consumers well below cost in an endeavor to keep our workpeople employed. The temporary closing of the markets in India and the Dominions, owing to financial stringency has cut off the chief export market of the British mills, but this is a small matter compared with the falling off in home production due to increased imports.

"It is of vital importance that any benefit from the proposed Anti-Dumping Regulations should be extended to the paper industry, and I feel sure that a realization of the critical position of the paper trade, in which nearly 15-16ths of our employees are wholly or partially unemployed, will not be lost sight of by Parliament in the action taken on proposed Anti-Dumping Legislation."

This letter from Mr. Stanley Cousins worked liked magic. "Free Traders" wrote that the Anti-Dumping Bill was "a measure of high Protection...It provides for an **ad valorem** duty of 33 1-3 per cent against goods imported from countries where the exchange is in our favor. This means favor to America and a handicap against France, Italy and Belgium. How will it influence our own prosperity?"

Then one gets back to the argument that British newsprint cannot undersell the foreign material at its undercutting price. What can they do?

The Newsprint Consumers Case.

After the letter written by Mr. Stanley Cousins appeared in the "Times" the paper consumers "had a go" at him. Lord Beaverbrook (interested in the London "Daily Express") and Sir Edward Hulton (another newspaper magnate) issued their side of the case, viz. the consumers of newsprint. Their manifesto was sent up and down the country and they heralded the fact that they wanted cheap paper. Indeed, they don't care where it comes from so long as they can get it.

These two gentlemen wrote: "We see that the paper manufacturers in England are asking that the clauses of the Financial Resolutions being debated in the House of Commons, which enable a 33 1-3 tax be put on imports of debtor nations should be applied to the newsprint industry owing to the lack of employment which affects it. The consumers of newsprint in this country would not, we feel sure, wish to do anything to hamper a British industry in difficulties, but it is as well that Parliament and the Board of Trade should know what the exact state of affairs is before they take action.

"Mr. Stanley Cousins says in a letter to the "Times" that the manufacturer here is actually selling below the cost price of production in the effort to keep men employed and that the state of affairs is due to the competition from Norway, Sweden, Finland and Germany—owing to dumping and the low rate of exchange with Finland and Germany. Supposing this to be the case what is his remedy? To put the 33 1-3 per cent tax on newsprint imports from these countries. Let us examine the consequences of such a proceeding.

Would the Canadian Market be Disturbed?

"To begin with," say Lord Beaverbrook and Sir Edward Hulton, "the tax cannot be imposed on the import from Sweden, any more than that from Canada, Newfoundland, and the U.S.A., because the rate of exchange is against us in all four countries.

"The first result will be that Sweden, taking advantage of the European monopoly thus conferred on her by the British Board of Trade, would export her entire production to Great Britain and make good her own deficiency by importing that of her excluded neighbors. The newsprint industry in this country would not be a penny the better for the transaction or employment increased in any way. If Norway or Finland still have a surplus they would be obliged to ship it to the New World, disturbing the American and Canadian market and ultimately our own, and setting free more exports to Great Britain from these countries.

"You cannot help a British industry by blacklisting the imports of a certain number of countries while letting the imports of others in free. Apart from the European supply altogether so long as Newfoundland, Canada, and the U. S. A. can send us newsprint free they will continue to fix the world price, which our manufacturers will be unable to alter. Nothing except a tariff on the newsprint import of all countries will be of the slightest use to Mr. Stanley Cousins and other manufacturers.

High Priced Pulp.

"The statement that the manufacturing industry is selling here below cost price is perfectly true. The further suggestion that this state of affairs is due entirely to competition from European debtor countries need qualification. It is also due to the fact that manufacturers are working off raw materials (groundwood and chemical pulp) bought in foreign countries under contract at the very high prices of the past year. At the best these contracts will not run out till June 1922, but the materials have to be used at some time or another and the consequent losses faced.

"The consumers of newsprint in this country certainly ought to consult together with a view to arriving at some means of assisting within the limits of their power an industry which employs so many thousands through a bad time. But do not let the manufacturers rush blindly to Parliament and a tariff remedy which will not cure a single one of their troubles and will do nothing except cause a general upset in the newsprint markets of the world."

In considering this question Canada enjoys a unique position. "Trade within the Empire" we are told and Canadians will have to watch closely this tariff question in England, as Canadian paper and Canadian pulp is appreciated probably more than any other. But the Scandinavians have got a hold financially and otherwise on the market here and the only opponent they are afraid of is Canada. It is up to Canadians now to say if their market would be disturbed by a duty on foreign paper! Also, Canadians must see that Canadian made newsprint still and will enjoy free import.

The London "Daily News" says that Lord Beaverbrook and Sir Edward Hulton suggest that a tariff on the newsprint imports from all countries should be an alternative. "Do Lord Beaverbrook and Sir Edward Hulton mean this proposal to be taken seriously?" adds the "Daily News", "or are they putting it forward as a **reductio ad absurdum** of the whole argument for tariffs? They profess great concern over the state of employment in the newsprint industry. Yet in June 1919, when the "Daily Express"—Lord Beaverbrooks paper — was fighting the war-time paper regulations, it was pointed out by that newspaper that: "while the printing industry is one of the greatest in the country, papermaking is a comparatively minor industry. Do Lord Beaverbrook and Sir Edward Hulton now maintain that employment will be increased by taxing the raw material of what they call the greater industry in order to protect the lesser?"

HELPING NATURE.

The development of tree planting on the wind-swept prairies of the west is the mission of a special car which left Ottawa for Calgary last week under the auspices of the Canadian Forestry Association. The car is not connected with any Government department or commercial interest but is one of the enterprises which the Canadian Forestry Association has put into effect in the course of its widespread educational campaigns.

Inside the car instead of the ordinary seating accommodation, is a row of about 120 seats, rising tier on tier, like a collegiate lecture hall and in this are delivered lectures on how to start tree planting, the value of shelter belts as protection for crops and live-stock, and other aspects of arboreal work on the prairies. The car is self contained in every way and has its own electrical plant so that when it arrives at some small out-of-the-way spot on the prairies, it is able to present motion pictures without being dependent on local resources.

The method of procedure is to travel over the western prairies and stop at centres where it is evident that there is need of tree planting. In advance the advent of the car has been advertised, and the co-operation of all public organizations likely to help is enlisted. Afternoon and evening lectures are delivered; local problems are discussed and questions are answered. Moving pictures which are shown illustrate the whole process of tree-planting from the seedling in the nursery to the ultimate mature tree. Sixty million seedlings have been successfully grown on the prairies, and the association has some fine photographs of well wooded areas that were formerly bare and open. The result in these areas has been that it is now possible to grow fruit and produce that formerly could not withstand the wind storms.

The Lecture Car was outfitted at Ottawa and was sent to Montreal for a day's inspection when Lord Shaughnessy and E. W. Beatty, chairman and president respectively of the C. P. R., paid it a visit and expressed great interest in the project. Mr. Robson Black of Ottawa is in charge of the Canadian Forestry Association's educational enterprises which, in Eastern Canada, are mainly concentrated upon the prevention of forest fires through winning popular co-operation.

Howard Smith Paper Mills, Ltd., Pioneers.

By A. R. R. JONES.

Among the pioneers in the pulp and paper industry on a great scale in Canada, high place must certainly be accorded to the Howard Smith Paper Mills, Ltd. The history of the Company in question, which was founded, some twenty years ago, by Mr. C. Howard Smith, its present President, has been marked by steady, consistent and continuous growth and progress. This has been due not only to high efficiency of organization, but also to systematic and tenacious adherence to a carefully devised policy which has placed in the forefront of its program, as an absolute essential, the maintenance of a uniformly high standard of quality in its products.

The Company's mills are situated at Beauharnois and Crabtree Mills in the Province of Quebec and Cornwall in the Province of Ontario.

The timber limits are located in the Gaspe Peninsula, and comprise an area of 480 square miles. These limits are exceptionally well wooded and carry a very heavy percentage of Black Spruce, the remaining woods being made up of White Spruce and some Balsam. The wood is of excellent growth and can be lumbered at a very low price. At Gaspe the wood is rossed and put on boats and conveyed to Cornwall entirely by water, where the sulphite mill of the Company is located.

The Company's Cornwall Division has been making paper since 1887 and was taken over by the Howard Smith Paper Mills, Ltd., in 1919. Cornwall, it should be mentioned, is approximately sixty-seven miles west of Montreal and is connected with that city by steamship and by the Grand Trunk and by the Canadian Pacific Railway lines. The sulphite mill at Cornwall is absolutely new and is acknowledged to be the last word in sulphite construction. The capacity of this plant is between seventy and eighty tons a day. The Company also has in process of construction an electrolytic bleach plant, where it will manufacture all its own bleach.

The paper mill at Cornwall has four Fourdrinier machines — one seventy-two inch, two eighty-two inch, and one ninety inch, — seventeen beaters, and four super-calenders, the widest of which takes a fifty-two inch sheet. This mill will run on Sulphite Bonds, Antique and Featherweight Books, No. 1 Books, Flat Writings, Blotting Papers, and one machine is now being changed over to manufacture Bristol Board. The Bristol Board at the present time is imported almost entirely from the United States. It should also be said that the Company is the first and only manufacturer of blotting paper in Canada. The plant at Cornwall has been thoroughly gone over and the new boiler house built of the latest design. The production at this Division will be at the rate of at least fifty tons a day.

At the village of Crabtree Mills, some four miles from Joliette, and between thirty and forty miles from Montreal, are located the Crabtree mills. The writer was recently afforded the opportunity of going all over this big plant and was profoundly impressed with the obvious excellence of its whole planning and organization and with the superb condition in which it is kept. Sulphite bonds are an important product of these mills and the daily output is very heavy. The mills are equipped with two machines, and the equipment of the beater and finishing rooms is the last word in efficiency. The latter of the two machines installed at Crabtree is equipped with the new Harland Electric Drive. A plant for handling old papers is being installed there. This plant will manufacture book papers at extremely low prices, as it will be enabled to do by reason of the fact that the Company has its own water power and plenty of water to wash the stock. It is readily apparent that on the building of these mills the most careful attention was bestowed, and the same remark applies to the arrangement of the location of the various manufacturing units. The product is notable for its cleanness, fine color and uniform high quality.

The main material used in the Crabtree plant will be old magazines and sulphite pulp. The output is 40 tons a day. The power of these mills is generated by the Company at its own development on the Lac Oureau river, on which the mills are situated.

Crabtree Division Recently Enlarged.

Power from this source also lights the village, which has a population of over 300, and the various houses in it. The Company has opened in the village an admirable club-house, with bowling alleys, billiard and pool tables, card room, reading rooms and a large lecture hall which is also utilized for various social functions, for the use of its employees. It also runs a boarding-house for their use, at which some fifty or so of them obtain excellent accommodation. Further, it has erected several admirably-planned houses, and is contemplating the erection of several more, to provide residential accommodation for married employees. In short, the village is in rapid process of development along the best and most modern communal lines. It should be added that, during the day-time, a school is conducted in the club-house by a highly qualified teacher.

At the Beauharnois Division, where the manufacture of paper was started in 1912 on an 86 inch Fourdrinier machine, the Company has a loft-dried mill and two Fourdrinier machines in operation. The more recently installed of these was built by the Dominion Engineering Works, Ltd., of Lachine, near Montreal. This plant represents the very latest in paper mill construction and equipment. It is completely equipped to manufacture the highest grade Bonds, Steel Plate, Stationery Paper, etc. The two machines mentioned produce something like twenty tons daily of tub-sized, loft dried, Bond and Ledger Papers and High Class Stationery Papers generally. The mill is situated on the shores of the beautiful Lake St. Louis, which is a broadening of the St. Lawrence river. This situation is an ideal location for the manufacture of paper, inasmuch as it is assured of an abundant supply of pure water of precisely that quality so essential to the making of high grade such as those for their pre-eminence in the manufacture of which the Howard Smith Paper Mills, Ltd., are renowned.

Indeed, with regard to all the three plants of the Company, it may be said that their location could not possibly be improved on. It is, no doubt, partly owing to this fact that the Company's costs of manufacturing are as low as those at which any mills can manufacture.

The officers of the Company are as follows: Mr. C. Howard Smith, President; Messrs. Jas. W. Pyke and J. Alexander Cameron, Vice-Presidents; Messrs. J. J. M. Pangman, D. W. Campbell, W. D. Robb, Howard Murray, and T. P. Howard, Directors; Mr. Harold Crabtree, Secretary; Mr. E. Howard Smith, Treasurer; and Mr. T. P. Howard, Comptroller. The office of Comptroller, by the way, is a new one, the creation of which has been rendered necessary by reason of the great expansion in the scope and business of the Company during the past few years. Approximately, the number of employees at the three mills is as follows: at Beauharnois, 220; at Crabtree Mills, 150; at Cornwall, 350.

The Company also owns the Federal Paper Company, which acts as distributor for a part of its product.

In conversation with the writer, Mr. C. Howard Smith, the President of the Company, said that, while manufacturing orders had been slack for some months, they had, since the middle of April, shown a decided improvement. He added that the sales through the distributing Company have been very good, particularly in writing papers.

SAYS CANADA'S TIMBER NOT IMPORTANT.

Ch. Groud, writing in Le Papier, for February 1921, seems to realise that our forests, in spite of the fine showing they are making at present in furnishing a very considerable proportion of the world's paper supply, are by no means inexhaustible. He says, "Canada and neighbouring countries export mostly soft coniferous woods; of which it is estimated they furnish about 85% of the world's consumption....... It is thus seen that there are actually two great timber reserves, viz., in central Africa and in South America. The timber reserves of Canada are not so important, though at the present time they supply the major portion of the world's supply." Forewarned is forearmed. By taking proper care of our resources we can surely retain the very enviable position we have acquired within the last decade.—A.P.C.

I. H. Weldon, head of the Provincial Paper Mills Company, Limited, Toronto, has returned from a trip to the Pacific Coast.

The Cornwall Division is situated on the St. Lawrence Canal System.

FOREST PRODUCTS; THEIR MANUFACTURE AND USE. By Nelson Courtlandt Brown, B. A., M.F. John Wiley and Sons, New York. 1919. 471 pages, 120 illustrations. Price $4.00.

One of the principal problems of the forester is to accomplish the complete utilization of timber cut. The more fully he is informed of general practice the more easily can he decide on the possibility which may be applicable to his own circumstances. One of the most complete and interesting reviews of the manner of utilizing the forest, is presented in Prof. Brown's book. The pulp and paper industry is honored by being the first one to be described. Forty pages are devoted to this branch of the subject. This chapter is credited to Mr. T. J. Keenan, F.C.S. who is known to nearly everyone in the industry as a former editor of "Paper" and secretary since its organization, of the Technical Association of the Pulp and Paper Industry. Mr. Keenan has succeeded in getting a great deal of useful material into the pages at his disposal and his treatment of the subject should be of considerable assistance to the forester or woodlands owner who is not an expert paper maker. A few typographical errors will doubtless be noticed by the critical paper maker but this does not detract seriously from the value of the chapter. It will be noticed with some amusement for instance, that the pulp is screened through a 10″ perforation and that the disc of a chipper revolves at 2,000 revolutions per minute. As some of the material is quoted from some other sources, including Government bulletins, it is difficult to place the responsibility for the assumption of 15 cords as the average cut per acre for all kinds of pulp wood, and that 80% of the pulp companies own their own standing timber. To the bibliography might be added Huebner's "Coloring of Paper," Stevens' "Paper Mill Chemist," Sutermeister's "Chemistry of Pulp and Paper Making" (John Wiley and Sons) and Witham's "Modern Pulp and Paper Making," (Chemical Catalog Company). The names of the Pulp and Paper Journals might also have been mentioned.

As regards the general information given in the book, it is interesting to note that nearly twice as much wood is used in the United States for boxes and crates and for cross ties as is used for making woodpulp. Throughout the work we find tables giving in concise form, a great deal of valuable information regarding the consumption of wood for various purposes and the wastes and yields involved. The excellent illustrations include both diagrams and photographs. A number of various chapters have been written by specialists in their particular line which gives the book a greater dependability. Besides the chapters on general statistics and the manufacture of pulp and paper, the subjects include Tanning Materials, Veneers, Slack Cooperage, Tight Cooperage, Naval Stores, Hardwood Distillation, Softwood Distillation, Charcoal, Boxes and Box Shooks, Cross Ties, Poles and Piling, Posts, Mine Timbers, Fuelwood, Shingles and Shakes, Maple Syrup and Sugar, Rubber, Dye Woods and Materials, Excelsior, Cork.

The book had hardly been in the office a day before the editor found occasion to use it and had the satisfaction of finding an answer to a question from a correspondent. No doubt there are many among the readers of the Pulp and Paper Magazine who will be glad to have a copy of this excellent volume. It is distributed in Canada by the Renouf Publishing Company.

CHANGE OF ADDRESS.

News Print Service Bureau.

On April 25, 1921, the Office of the Newsprint Service Bureau will be moved from 18 East 41st Street to Room 607 Canadian Pacific Building—

342 MADISON AVENUE
New York City

Which is on Madison Avenue between 43rd and 44th Streets, directly west of the Grand Central Station.

Correspondents and exchanges are asked to kindly change their mailing lists so that mail to arrive on April 25 or later will be sent to the new address.

R. S. KELLOGG,
Secretary.

THE WOODLANDS SECTION A.P. & P.A.

The following are eligible for membership in the Woodlands Section of the American Paper and Pulp Association: Managers of woodlands departments; woods superintendents; logging engineers; foresters, and others directly employed by pulp and paper companies in the acquisition, exchange, management and exploitation of timber or timber lands.

This section is now in a position to collect and disseminate to its members and the Industry valuable information in regard to methods of forest management and forest exploitation. The value of this Section will depend entirely upon the use members make of it in connection with the many practical problems of their timber land developments.

Some of the subjects for discussion at the first annual meeting of the Woodlands Section are: The Use of Tractors on Snow and Ice Roads in Woods Operations; Slash Disposal in Relation to Fire Protection and Reforestation; Sinkage of Pulpwood on Drives and in Storage; Woods Operations Costs; Methods of Forest Maps and Surveys in Relation to Taxation and Forest Management. Members of the Section would welcome the attendance of the Woods men of both American and Canadian pulp and paper companies.

HARD ON THE BRITISH.

The London "Daily Mail" publishes the following letter, inter alia, from a Dutch printer named Wm. Smit: "We get almost heaps of offers from German papermakers. From English firms we never see any. It is not only the low exchange which induces us to buy, but in the first place the quality, which is much better than that offered by our own factories. As a neutral I do not care a penny whether I buy from Germany or Great Britain, and we in Holland often wonder how it is possible that vanquished Germany can display such energy and tenacity . . . I am convinced that unless Great Britain alters entirely her business policy with the Continent (for instance by accepting the Continental weights and dimensions) Germany will again succeed in playing the first violin. The only way left for England to make headway against the competition of Germany is to be more efficient and more tenacious in her business methods. Many English firms have not the slightest knowledge of the ways of Continental business men. The best thing you in England can do is to be more industrious and more modern in your business ways . . . and to see that your people learn foreign languages, as we do in Holland." The latter part of this remarkable letter has been preached by British consuls for the past 15 years.

Technical Section

REVIEW OF RECENT LITERATURE

A-3. Treating Typhacea to obtain Fibrous Material. — Ger. patent No. 303,933, P. HORING, Nov. 2, 1917. **J. Soc. Chem. Ind.**, xxxix, 568A (Aug. 31, 1920).—Reeds such as **Typhaceae** before treatment with liquor to separate the fibrous matter are boiled exhaustively with water and after removal of the undissolved residue, the aqueous solution is evaporated to dryness under reduced pressure. A yellowish brown, hygroscopic product is obtained which contains 20 percent of ash, chiefly CaO and P_2O_5, nitrogenous matter, hexoses and pentoses, it possesses nutrient and therapeutic properties.—A.P.-C.

E-2. Resinous Products from Sulphite Waste Liquor.—Ger. patent No. 320,508, W. OEHL, Nov. 30, 1916. **J. Soc. Chem. Ind.**, xxxix, 568A (Aug. 31, 1920). Silicates or compounds of heavy metals are added to the sulphite waste liquor, whereby the $CaH_2SO_3)_2$ is converted into Ca silicate or into an insoluble bisulphite, which is then separated from the resin solution. —A.P.-C.

E-2. Treating Waste Sulphite Liquor for the Recovery of SO_2.—U. S. patent No. 1,342,721, AUGUST SCHAEFER, Portland, Ore., U.S.A., assignor to Northwest Process Company, June 8, 1928. **Chem. Met. Eng.**, xxiii, 301 (Aug. 18, 1920).—The SO_2 is recovered from the waste sulphite liquor in such a way as to leave the liquor in a favorable condition for fermentation, etc. The waste liquor as discharged from the blowpit of the digester flows in a thin film over a series of vertically stacked steam-heated coils contained in a chamber in which a vacuum of 5 to 6 inches is maintained by a barometric jet condenser. The heat and diminished pressure facilitate the escape of SO_2, which is recovered by absorption in water in a suitable tank situated between the evaporating chamber and the condenser. The remainder of the liquor is discharged through the bottom of the evaporating chamber, neutralized and cooled. It may then be fermented for the production of alcohol.—A.P.C.

H-0; R-2. The bleaching of paper pulp. CLARENCE J. WEST. **Paper Trade J.**, lxxi, (Dec. 9, 1920).—Contribution No. 22 of the Committee on Bibliography of T.A.P.P.I.—C.J.W.

K-10; R-2. The sizing of paper—a reading list. — CLARENCE J. WEST. **Paper Trade J.**, lxxi, 20 (Nov. 11, 1920); 21 (Nov. 18, 1920).—Contribution No. 19 of the Committee on Bibliography of T. A. P. P. I.—C.J.W.

K-14. Evolution of the modern Camachine.—U. S. Paper Maker, lxii, 24 (Nov. 15, 1920).—Discussion of the Cameron slitting and rewinding machines.—C.J.W.

K-23; R-2. Blotting paper—a reading list.—CLARENCE J. WEST. **Paper Trade J.**, lxxi, 22 (Nov. 25, 1920).—Contribution No. 21 of the Committee on Bibliography of T. A. P. P. I.—C.J.W.

K-23; R-2. Filter paper—A reading list.—CLARENCE J. WEST. **Paper Trade J.**, lxxii, 15 (Oct. 1920).—Contribution No. 16 of the Committee on Bibliography of T.A.P.P.I.—C.W.J.

K-0; R-2. Paper making materials.—CLARENCE J. WEST. **Paper Trade J.**, lxxi, 25, 26, 1, 2, 3, 4, 5, 6, 7, 8. (Dec. 16—Feb. 17, 1920-1921).—Contribution No. 23 of the Committee on Bibliography of T. A. P. P. I.—C.J.W. (Now available as reprint.—Ed.)

K-0. Soles of Paper, etc.—Br. patent No. 123,166, S. ABRAHAM, England. **Chimie & Industrie**, iv, 668 (Nov. 1920).—Soles composed of a layer of paper, cardboard, powdered cork, and sawdust, covered with a waterproof fabric both sides of which have been coated with an adhesive solution consisting of naptha, para rubber, boric acid, powdered alum, and alcohol soluble color.—A.P.-C.

K-0. Artificial Leather.—Br. patent No. 141,385, G. MILLER, Meopham, Kent, England, June 9, 1920. Chem. Met. Eng., xxiii, 349 (Aug. 25, 1920).—Artificial leather is made from paper, alone or combined with a textile fabric, by treating with a vegetable glue such as is obtained from bananas, or from the farina of **Cloocasia esculadium,** mixed with water containing 25 percent glycerin, with or without the addition of isinglass, casein, gum damar or other agglutinant. The material is then air-dried and may be dyed. The material so treated may be waterproofed with a mixture containing a vegetable wax such as carnauba, mixed, for example, with paraffin wax and turpentine. Several sheets may be superimposed, and the material may be finished to give it the appearance of ordinary leather.—A.P.-C.

L-5. Thickening Fabrics Made from Paper Threads. —Ger. patent No. 301,561, P. RAWITSCHER, Germany. **Chimie & Industrie**, iv, 669 (Nov. 1920).—The finished fabric is subjected to a prolonged cooking. The threads are permanently swollen.—A.P.C.

L-7. Precipitation and Purification of Artificial Silk Solutions. Ger. patent No. 324,334, A. THILMANY, Sept. 14, 1919. **J. Soc. Chem. Ind.**, xxxix, 788A (Dec. 15, 1920). Acidified water or a weak salt solution is sprayed into a bath of the usual precipitating solutions through nozzles, which are fixed between two electrodes. The precipitated or superficially coagulated fibers are thus hardened and purified.—A.P.-C.

L-7. Bath for Spinning Threads from Viscose. Ger. patent No. 324,433, J. C. HARTOGS, March 1, 1914. **J. Soc. Chem. Ind.**, xxxix, 778A (Dec. 15, 1920). The bath consists of a dilute solution of sulphuric acid containing not less than 7 per cent H_2SO_4, to which two or more soluble sulphates are added in such quantities that not less than five equivalents of SO_4 ions are present for every three equivalents of H ions. A suitable solution for viscose which has been kept 7 to 8 days consists of Na_2SO_4 sixteen parts, $MgSO_47H_2O$ thirty parts, H_2SO_4 nine parts, and water forty-five parts.—A.P.-C.

L-7. Artificial Threads.—Br. patent No. 141,041, Glanzfaden Akt.—Ges., Petersdorf in Riesengebirge, Germany, June 2, 1920. **Chem. Met. Eng.**, xxiii, 300 Aug. 18, 1920).—To obtain very fine threads from viscose by the drawing out process, the viscose used is prepared from a "very weak hydrated cellulose", and the original relatively-thick threads are stretched, while undergoing coagulation, in a slowly acting precipitating liquid, such as 1 percent H_2SO_4 solution.

After leaving the coagulating bath, the threads are wound on reels revolving in a 2 to 4 percent H_2SO_4 solution, by which they are finally hardened.

L-7. Precipitating Bath for Artificial Threads. Br. patent No. 147,416, ZELLSTOFFFABRIK WALDHOF and V. HOTTENROTH, Mannheim, Germany, Oct. 6, 1920. **Chem. Met. Eng.**, xxiii, 1181 (Dec. 15, 1920). A precipitating bath for artificial threads, etc., more particularly of viscose, consists of the crude mixture of carbohydrates, etc., obtained on hydrolyzing wood or other cellulose-containing materials with mineral acid; the acid in the bath may be partly or completely neutralized, and other reagents such as ammonium sulphate, solium bisulphate, formic acid, lactic acid, and alum, may be added. In an example, sawdust is kneaded with 80 per cent sulphuric acid, left to stand, diluted with water, and the mixture heated; the hydrolyzed mass is concentrated, partly neutralized, filtered and treated as above, or it may be completely neutralized and concentrated to a syrup or to crystallization.—A. P.-C.

N-7. U. S. Water-Power Commission regulations. Paper, 9-10, (Sept. 29, 1920). A brief outline of the regulations governing the procedure for obtaining licenses for water-power development operations under the recently passed Federal Water-Power Act. —A.P.-C.

N-7. Unused energy of the United States.—Water-power resources and development. The Guaranty Trust Co. Paper, 23-4, 30, (Sept. 15, 1920). An analysis of the estimated total water-power and the developed water-power of the U. S. and the advantages of water over fuel as a source of mechanical energy, together with a discussion of the recent Water-Power Act. — A.P.-C.

O-3.—Operation of the hot-process water softener. GEORGE H. GIBSON. Chem. Met. Eng., 22, 899-902, (May 12, 1920); Paper, 14-8, (Sept. 8, 1920), 25, 32 (Sept. 15, 1920). The Sorge-Cochrane Hot-Process Water Softener performs the functions of water softener and at the same time of open feed-water heater. The advantages of softening water hot instead of cold are: much greater speed of reaction between the softening chemicals and the incrusting solids of the water; increased size of pptd. particles and decreased viscosity and density of the water, resulting in a quicker sedimentation. Analyses are given showing that in a com. installation the softener had reduced the total solids from 40.72 to 23.95 gr. per (U.S.) gal. and the incrusting solids from 31.48 to 1.65 gr. per (U.S.) gal. The mechanical features of the app. are described, particularly the chemical proportioner used to regulate the feed of chemicals in proportion to the flow of raw water and the sand filter for filtering off the pptd. scale-forming ingredients of the water.

P-2. Pulp and Paper School of the University of Maine. CHARLES A. BRAUTLECHT. Paper, 21, 25, 44, 46, (Sept. 22, 1920). A description of the purpose and scope of the Maine Pulp & Paper School with a list of the subjects taught in each yr. of the course.— A.P.-C.

R-2. Hstory of papermaking in the United States.— MAUDE V. DICKINSON. **Paper Trade J.**, lxxi, 21 (Nov. 18, 1920).—Contribution No. 20 of the Committee on Bibliography, of T. A. P. P. I.—C.J.W.

R-2. Textile fibers and cellulose in Brazil. M. PIE CORREA. **Paper Trade Journal**, lxxii, 2 (Jan. 6, 1921). This is a review of a book, **Fibras texteis e cellulose**, issued by Minister of Agriculture, Industry and Commerce, Rio de Janeiro, 1919. The most important fibrous plants are Piteira gigantea (**Fourcroyagigantea**) and jute (**corchorus capsularis**).—C.J.W.

R-2. Paper research literature, vii.—A list of the contributions by members of the Bureau of Standards, Department of Commerce.—Compiled by F. A. Curtis. **Paper Trade J.**, lxxi, 19 (Nov. 4, 1920).—Contribution No. 18 of the Committee on Bibliography of T. A. P. P. I.—C.J.W.

R-2. Paper research literature. vi.—A list of contributions of the staff of Koniglisches Materialprufungsamt zu Berlin. Compiled by WILLIAM HERZBERG. Translated and augmented by CLARENCE J. WEST. —**Paper Trade J.**, lxxii, 17 (Oct. 21, 1920); 18 (Oct. 28, 1920). Contribution no. 17 of the Committee on Bibliography, of T.A.P.P.I.—C.J.W.

R-2. A rare book on papermaking. DARD HUNTER. Paper, 16-8, (Sept. 15, 1920). A description of Dr. Scheffer's book on papermaking (published 1765-1771) which is printed on 81 specimens of papers made from every form of vegetation that the author could reduce to pulp.—A.P.-C.

R-4. Standard paper sample books mean economy and profit. Paper, 10, 34, (July 28, 1920). A plea for a standardized size for paper mfrs.' sample books, so that they may be most handily filed for instant and continuous reference.—A.P.-C.

R-5. The Situation of paper.—H. H. REYNOLDS. **U. S. Paper Maker**, lxii, 24 (Nov. 15, 1920).—A careful analysis of the paper situation and the elements which enter into the cost of paper and their probable effect upon the cost of paper for 1921. It should be read by all manufacturers and consumers of paper.—C.J.W.

R-5. Paper exports to Argentina. Paper, 21-2, (Sept. 8, 1920). An analysis of the paper import trade of Argentina before the War and of the present opportunities in that field.—A.P.-C.

R-5. Paper production and consumption for the year 1921. GEORGE OLMSTEAD. **U. S. Paper Maker**, lxii, 9, (Nov. 15, 1920). It is estimated that 1920-1921 will see the installation in the United States of 100 new papermaking machines, producing about 4,800 tons per 24 hours, or nearly 1,500,000 tons yearly. This is an increased capacity of 25 per cent for book paper, 33 per cent. for boards and 7 per cent for writings. The question of consumption is discussed from the standpoint of the advertising, which, as related to paper, is over $1,000,000,000 annually. Nineteen twenty-one advertising will be at least 10 percent more than for 1920.—C.J.W.

R-7. Careful systematic plan for industrial relations. Paper, 20, 32, (Sept. 22, 1920). Methods and features employed by the Spanish River Pulp & Paper Mills to establish sound relations between the company and its employees.—A.P.-C.

R-11. Activities of the Forest Products Laboratory. D. CLARK EVEREST. **U. S. Paper Maker**, lxii, 24 (Nov. 15, 1920). A statement is made of the problems which have been solved or which are now engaging the attention of the laboratory. One of the most interesting and important is the question of the storage of woodpulp and pulp wood.—C.J.W.

R-12. Cost system and the executive. — B. A. FRANKLIN. **U. S. Paper Maker**. lxii, 1 (Dec. 1, 1920).—C.J.W.

PULP AND PAPER NEWS

Union workers in paper and pulp mills of the United States and Canada have voted to reject the 30 per cent. wage reduction proposed by the manufacturers for May 11. Local unions have been instructed "that should satisfactory terms of settlement not be forthcoming from the paper manufacturers between now and the time of the expiration of existing agreements, work will automatically cease in the mills of six companies upon May 1, and thirteen companies upon May 11." Should the walk-out occur, labor leaders assert approximately twenty five thousand workers will be affected and fifty mills of 19 companies tied up. These mills, they claim, produce about two-thirds of the paper stock consumed in this country, having a daily output of 3,600 tons of newsprint and 1,500 tons of finer paper for job printing. Conferences between union representatives and manufacturers have been in progress since last February. The pulp and sulphite workers originally sought for a 10 per cent. wage increase and the paper makers for a five per cent. increase.

Mills countered with proposals for a new agreement providing for a nine hour day; discontinuance of overtime; 30 per cent. wage reduction; and allowance for a readjustment of these scales upon notice of either party up to May 15, 1922.

Two weeks ago union representatives formally notified manufacturers that they could not accept their proposals, but agreed to submit the matter to a referendum. The vote was taken last Sunday by local unions.

A big drop in the price of newsprint in the British market was predicted by Lord Beaverbrook, publisher of the Daily Express, in an address before a gathering of newspaper proprietors last evening. At present, he said, many British newspaper proprietors ware paying 8d per pound for newsprint, though it was now obtainable in the open market for 2¾d. This indicated abnormal conditions in the trade, which could not continue. After referring to the results of his investigations into the productive possibilities of various countries, Lord Beaverbrook said that he felt no hesitation whatever in declaring that "the fall in the price of newsprint would go very far." This declaration of Lord Beaverbrook's is in rather singular contrast with a statement made by him when he said that "The statement that the manufacturing industry is selling here below cost price is perfectly true."

For the last twelve months he has been making statements on this question. As proprietor of the London Daily Express and other publications, he, no doubt, has his reasons for the line he is taking on the matter. One might have thought that his former connection with the Royal Securities Corporation would have inclined him, on sentimental grounds, to more friendliness to the pulp and paper industry in Canada. But it is possible that sentiment does not bulk very big in his make-up. Anyhow, when people realize the lengths to which he is seemingly prepared to go, in his efforts to reduce the price of newsprint, they may possibly be a little more conservative in the attention they pay to such statements.

Mr. G. F. Steele, general manager of the Canadian Export Company, who has been across to Europe will return to Montreal, via New York, on the 1st May.

Some meetings of the pulp and paper industry will be held in Montreal today (Thursday) and Friday. Among those who will be in Montreal for such meetings are Messrs P. B. Wilson, of the Spanish River Pulp and Paper Mills, George McKee of the Donnacona Paper Company, F. J. Campbell, of the Canada Paper Company, John F. Taylor, of the E. B. Eddy Company, H. Biermans, of the Belgo-Canadian Pulp and Paper Company, George Chahoon, Jr., and E. L. Crooker, of the Laurentide Company and T. J. Thomas, J. B. McGibbon, of J. R. Booth, Ltd., H. F. E. Kent, of Kinleith Paper Mills, and I. H. Weldon, of the Provincial Paper Mills.

As to present conditions in the pulp and paper industry, talks on the subject with more than one recognized authority in Montreal can be briefly summarized as follows: The newsprint industry while not running at 100 per cent, capacity, is yet showing distinct signs of revival. Writing paper shows a fair business. In regard to the writing paper situation, informed opinion takes the view that one of the two reasons why business is not better in this line is that printers are "pooling" their stocks; jobbers, who are not getting much business, are doing the same thing, and, as a consequence, the mills are not getting the orders that they ought to get. The danger of such a state of things is that, when buying does seriously begin, everybody will be buying all grades at once, and thus will result in strong artificial stimulus which, in itself, is not the best thing for an industry. The wrapping paper market shows quite a definite revival in the United States, and there are clear indications that the same condition is obtaining in this country. With respect to the pulp situation, it looks as though every mill in the United States and Canada was using up every pound of high-priced pulp it has on hand before ordering more. As has happened on previous occasions, the paper mills will go into their improved markets with bare stockyards. This, in turn, will lead to increased briskness in the pulp situation at the return of normal conditions.

Mr. E. Beck, in charge of the publicity department of the Canadian Pulp and Paper Association, is sailing next Monday by the Droltningholm for Stockholm. Going with Mr. Beck, who is making a special study of forestry conditions in Scandinavia, are Messrs. Gustave Piché, chief forester of Quebec, and E. J. Zavitz, chief forester of Ontario. Mr. Beck's object in making the journey is to obtain information, which should be of high value to the industry in Canada, with regard to forestry methods, and particularly reforestation, in Scandinavia. He will have the advantage of traveling under the guidance of some of the leading Scandinavian forestry experts, and thus will be able to see much that is not usually shown to the outside public.

The organization meeting of the newly-inaugurated Paper Club, the genesis and objects of which were explained in these columns a couple of weeks ago, the by-laws of the Club were duly adopted. Mr. E. T. Reynolds was elected president and Mr. H. E. Bell vice-president and the following were elected as the executive committee: Messrs. S. Rodier, R. M. MacLean, and P. S. Burns. The following are the members of the Club: Messrs. E. T. Reynolds, L. C. Selby and Armand Gauthier, of McFarlane, Son and Hodgson; C. Jodoin, of La Cie de Papier Rolland; A. W. Bell, S. Rodier, A. Villeneuve, R. H. Ecclestone and J. L. Seguin, of the Rolland Paper Company, Ltd.; H. Larkin, J. A. Ireland, T. M. Hubley, J. Labelle, L. Cuibord, L. N. Veilleux, and J. B. Larkin, of the Federal Paper Company, Ltd.; J. Home and J. B. Commie, of the Beveridge Paper Company Ltd.; J. R. Matheson and J. Burns, of the Havill Paper Company; A. F. Winn and D. McCallum, of the Canada Paper Company, Ltd.; J. M. Hampshire, E. S. Wright, J. H. Harnott, H. E. Bell, and A. J. Langelier, of the E. B. Eddy Company, Ltd.; R. M. Maclean, R. B. Hale, A. S. Ginger, T. McDermott, R. G. Rodier, and W. H. Aird, of the Howard Smith Paper Mills; M. A. Reid, of Barber-Ellis, Ltd.; W. R. Currie, of the Dominion Paper Company; P. S. Burns, L. E. Toupin and Dyer, of W. V. Dawson, Ltd.; and S. W. Ewing of Victoria Paper and Twine Company.

With the rapid melting of the snow earlier in the month, power conditions are again normal in Northern Ontario. The Abitibi Company will not be affected by another period of low water, because their big storage dam is now almost complete.

The Queen City Paper and Twine Company, Limited, has been organized and been granted a charter by the Ontario Provincial Secretary's Department, authorizing the company to manufacture and deal in paper and twine and allied products. The company is capitalized at $40,000 and the head office is at Toronto with the following provisional directors: Joseph Bochnek, Morris Oelbaum and Hyman Siegel.

The David Publishing Company, Limited, has been granted incorporation by the Dominion Government with power to carry on business as general newspaper proprietors, publishers, etc. The capital stock is $50,000 and the head office is Montreal.

A directors' meeting of the Spanish River Pulp and Paper Mills, Limited, and the Fort William Pulp and Paper Company, Limited, was held in Toronto last week. Among those in attendance were W. L. Bird, manager of the Fort William Pulp and Paper Company, Limited: George H. Mead, of Dayton, Ohio: C. E. Read, of the Hull Lumber Company, Ottawa: Col. Jones and George Gray of the Spanish River Pulp Company. It was learned that the Fort William Pulp and Paper Company hopes to be grinding wood at its new plant in Fort William by the end of the month. Mr. Norris, vice-president of the Montreal Heat and Power Co. was also present at the meeting.

John Hewitt, of the Paper Sales Company, Yonge Street, Toronto, was greeted by many friends in the paper trade on his return from North Carolina where he spent several weeks regaining his health which had suffered through too close application to business. His many friends were pleased to note his old time vigor after an enjoyable outing.

The high water mark of efficiency was attained on April 7th when the employees of the Abitibi Power and Paper Company at Iroquois Falls turned out 265 tons of newsprint paper in one day on four machines, constituting 96.9 per cent efficiency. No. 5 machine, which is 160 inches wide, was recently installed in 28 days.

WAGE CONFERENCE OF PAPER MANUFACTURING COMPANIES.

New York, April 25. — Paper manufacturers, who met here today, continued in their stand that wages in their mills should be lowered, and made no change in the plan rejected recently by the various labor unions having membership in their factories.

The undersigned Paper Manufacturing Companies, at the request of the Brotherhood of Paper Makers and Brotherhood of Pulp, Sulphite & Paper Mill Workers, expressed through invitation of their International Presidents, have been acting together in an effort to arrive at mutually satisfactory adjustments of wage rates and working conditions to take the place of those provided for by the Trade Agreements which exist between each of such manufacturers and the labour unions named, with the object of avoiding any interruptions of operation in their manufacturing business when such agreements expire on May 1st and May 11th.

A preliminary meeting was held on February 24th, and a meeting attended by all of them on March 30th at which time the manufacturers present agreed on proposals to be made to the labour unions on the subject of wages and working conditions such as the present business situation in the paper industry warrants, due consideration being given to industrial and economic conditions as well as living costs.

A committee of manufacturers presented said proposals to the labor unions who had invited the joint action. The Committee reported to the full meeting of manufacturers April 20th, that the proposals made were rejected by the labor unions and that no definite counter proposition has been made by them.

"The action taken by the employees concerned," said a statement issued after the meeting, "is regretted by the manufacturers as each of them is desirous of operating his plant to the largest possible extent, thereby furnishing as much employment as is possible to the employees and paying rates of wages compatible therewith which are represented in the proposition submitted to the labor unons and rejected by them."

Manufacturers said tonight, however, that negotiations would be continued with the unions, and it was hoped the employees' representatives would submit some proposal to the employers.

The following paper companies were represented at the meeting:—Minnesota and Ontario Paper Company; Fort Frances Paper Company; Grand Lakes Company, Spanish River Pulp and Paper Company; Cliff Paper Company; Pettebone Cataract Paper Company; Hannah Paper Company— St. Regis Paper Company; International Paper Company, and the Union Bag and Paper Company.

"For want of a nail the shoe was lost,
For want of a shoe the horse was lost;
For want of a horse the man was lost;
For want of a man the battle was lost;
And all for want of a nail."
Poor Richard (Benj. Franklin.)

PAPER MACHINE BUILDING IN CANADA A NOTABLE ACHIEVEMENT.

With the completion of the two mammoth fast running newsprint machines for the Laurentide Company Limited, of Grand Mere, the Dominion Engineering Works, Limited of Montreal have stepped right into the fore front of modern paper machine builders. In the successful building of two 166 inch machines, which are acknowledged to be the very last work in modern machine design and construction, with a new organization, and in a plant not previously used for this class of work, they have accomplished what many well informed people held to be an impossibility.

The achievement is all the more notable when it is considered that both machines were designed, constructed, installed and placed in successful operation in a little over one year. Much credit is due to the Laurentide Company for the happy position occupied by the Dominion Engineering Works as the first builders of complete paper machines in Canada, first for their courage in placing such an important contract with an untried organization, and second for the help and cordial cooperation of their engineering and operating staffs in the design and construction of the machines. A number of novel features are embodied in the design and construction of these machines, as will appear from the following brief description:—

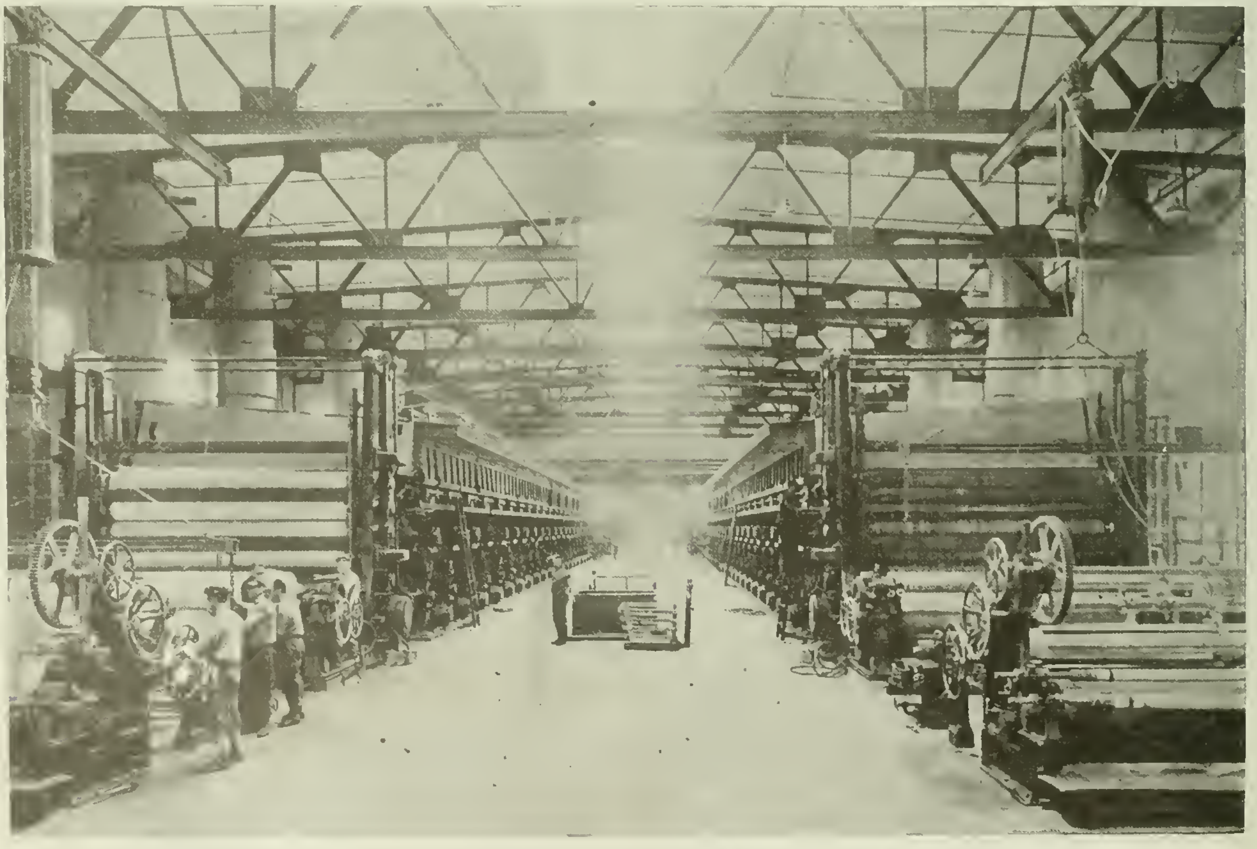
The wire part of fourdrinier is built without "shake" for a wire 166" wide, by 103'-6" long, and is arranged with a downward pitch of 30" from breast roll to couch roll. The usual fourdrinier rail construction is eliminated, and the breast, table, and wire carrying rolls are supported on a rigid cast iron frame. This frame is built in sections, each of which is strongly braced across the machine, and forms a unit in itself. Each of these sections carries its quota of table and wire rolls, and is designed so that it may be moved out to the centre aisle of the machine room on special ball bearing trucks without disturbing the table or other rolls when changing a wire. All of the table rolls, wire rolls, and breast rolls are mounted in S.K.F. ball bearings of the latest enclosed type.

The couch roll is of the Millspaugh patented suction type, 30" diameter, which is the largest roll of this type ever constructed. There are four sets of press rolls, of which the first is a Millspaugh suction press, and the other three sets are of standard type with bottom rolls rubber covered, and top rolls of polished granite. The press part presents a rather novel arrangements of felts, which are arranged in vertical loops, extending down into the basement, where are located the automatic take-ups; the absence of the usual top hamper of felt loops gives the machine a rather unusual appearance, besides adding to the convenience of the operators.

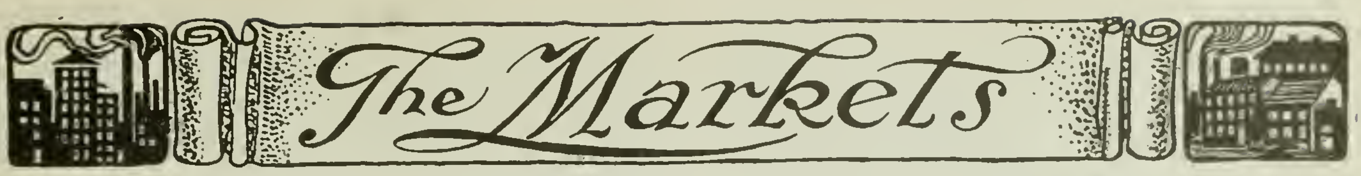
The paper is passed from the suction couch roll and through the presses by means of compressed air jets, thus entirely eliminating the passing of the paper by hand, and making possible much higher speeds than could be reached by the old methods.

The dryer part consists of a small leading dryer, and forty 72" main dryers, arranged in two tiers, the bottom tier being mounted in ring-oiling bearings which are carried directly on the machine base plates. The usual arrangement of dryer felts is used with all felt rolls carried in ring-oiling bearings of the most improved design. The paper is automatically passed through the dryers by means of a "Sheahan" patented rope carrier, and from the last dryer to the calender by means of a specially arranged series of air jets. The calender is of the usual design with bottom roll 30"

(Continued on page 466)



Laurentide's No. 8, and No. 9 Paper Machines— Model Machines in a Model Machine Room.



The Markets

CANADIAN TRADE CONDITIONS.

Toronto, April 23.—Generally speaking the pulp and paper situation remains unchanged and although in a few lines of paper there are signs of a brightening up in trade, according to the statement of one big mill man, business on the whole is quiet. The general concensus of opinion is that pulp and paper industry can hardly be expected to recover anything like its old-time vigor until Canadian business conditions generally improve, and that is not looked for much before the coming fall, although there are those who take the view that considerably freer buying is bound to set in before then by reason of the fast diminishing stocks. Labor troubles, both among paper mill workers and printers, are in the offing and these are liable to further accentuate the unsettled conditions of the trade, although in the long run, a shut down of any of the mills in Canada or the United States by reason of a possible strike, is looked upon as possessing a certain advantage from a trade standpoint, for it would probably mean that the surplus of paper will be greatly reduced if not entirely consumed and thus placing the newsprint mills in a stronger position as regards market demands and prices. Of course earnings would be reduced by those mills which would close, but curtailment of production for a month or more might produce favorable results. It will be recalled that the pulp and paper unions demanded an increase in wages, and so far from agreeing to this mill owners, whose mills are unionized decided to bring into effect a cut of 30 per cent in wages on May 1st. Whether the contending forces will clash in a strike is yet to be seen but is is considered within the range of possibilities. It is reported in some quarters that the men may be willing to accept a cut of from 20 to 25 per cent but no decision has been reached on this point. The two chief union mills in Canada are the Spanish River and Abitibi, while Laurentide, Price Bros., Brompton, Donnacona and others are among the "open shops." In some of the mills cuts in wages, it is stated, have already taken place and others will likely fall into line but the test will come when the wage agreements come up for signature on May 1st.

In the meantime the Canadian paper industry is facing ever increasing competition from European countries in the United States market as indicated by the fact that during February last, Canadian mills sent to the United States a total of 97,788,183 pounds of print paper, valued at over six million dollars. This was a decline of three-quarters of a million dollars in business as compared with the previous month. It is also pointed out that both Belgium and Germany are beginning to send paper to the United States market. The figures are interesting as showing the somewhat altered condition of the position of the Canadian mills during the present year, although there is no fear but that the Canadian output of paper will always find an outlet. The industry on the whole is healthy and temporary adverse trade conditions are only partially interfering with expansion plans. For instance it is practically assured that a large pulp mill will be constructed on the shore of Lake Temiskaming, two miles north of Haileybury, the township council now considering the matter of a fixed assessment for the promoters of the enterprise and the matter of the use of the required water frontage already having been arranged with the Dominion Government. The company is known as the Temiskaming Pulp and Paper Company, Limited, and is capitalized at $500,000, with head office at present in Toronto. It is proposed to construct a 40-ton groundwood mill, the engineers being Messrs. Viele, Blackwell & Buck, 49 Wall Street, New York. Ontario and American capital is involved in the enterprise. According to the agreement between the company and Buck Township, the buildings are to be completed early next year.

The company will have fifty square miles of limits along the River Quinze in the Lake Expanse district, Quebec, on which there are 260,000 cords of pulpwood, which will be brought across Lake Temiskaming by boat. Alex. Faskin, the well known Toronto lawyer and pulp and paper company promoter, is president of the new company and C. C. Calvin, secretary-treasurer. (These figures would give 8 cords per acre—rather rosy!—but even so, would provide wood for only 20 years.—Ed.)

THE RIORDON SLUMP.—In Toronto pulp and paper circles the event of the week was the sensational drop of the Riordon paper stock. The general consensus of opinion among the brokers and others appeared to be that the firm would pull through. One broker put it this way: "There was an untimeliness in the break in paper which caught the papermakers of Canada in between seasons. They had laudably put a great deal of money into perfecting and extending their mills, when they had lots of money, and then ran into depression and are, unfortunately, now short of cash. The paper industry is fundamental in Canada and cannot but come out allright in the end. Of course, if you get too far extended you can embarrass any industry in the world."

PAPER TRADE JUMPY.—A slight improvement in some lines of the paper trade has been noted during the week although business generally is dull and somewhat spasmodic. In most lines business comes in fits and starts and orders in various lines, such as book and writings, wrappings and light papers, are for the most part of small proportions. On the other hand an Ontario mill making light weight papers received an order last week for three carloads of their product. One Canadian mill with head office in Toronto reports their mills quite busy, chiefly on book paper for the publishers and are runing close to full time. There is little business doing in either chemical or mechanical pulp and the mills have large stocks on hand which they are having difficulty in disposing of. Some transactions are taking place but there is no set market price for pulp. Nominal quotations on ground wood are from $35 to $45; easy bleaching sulphite $95.00 to $100; news grade sulphite $65.00 to $75.00; bleached sulphite $125.00 to $130.00 and sulphite around $80.

BOARDS ARE DOWN. The week saw a drop of

ten dollars a ton in several lines of board. Straw board dropped from $60 to $50; chip board from $60 to $50 and chip vat-lined from $75 to $65 a ton. Business in this line of paper product is still very quiet and dealers report that there are more orders to be had outside Toronto than inside the city.

NEW YORK MARKETS.

New York, April 23.—(Special Correspondence.)—Although the general paper market situation has undergone little notable change this week, most of the reports emanating from manufacturing and distributing centres have been of rather encouraging character. Judging from these advices, business in at least some lines of paper is at last on the mend. There is a lack of concerted movement of any one grade, yet it would appear that demand is commencing to improve, and everything would seem to point to the industry having experienced the worst and that from now on matters will gradually become more favorable.

Consumers are still buying only when necessity compels them to, and there is nowhere near a normal movement of paper of any kind for the principal reason that consumption does not begin to approximate that of more ordinary periods. Nevertheless, it can be said that the market is sprucing up a bit and that buyers are steadily evincing increased interest, indicating that their requirements either are broadening or else display some signs of increasing. A consensus of opinion among paper men is that the market is unlikely to become fully stabilized or that demand will reach anything approaching normal before the autumn, but there is a common feeling that business during the coming summer will certainly be better than it has been within the past few months. Certain lines of industry are getting livelier each day, which is bound to be reflected in the paper trade in short order, because there are few industries which do not use paper of some description.

Present indications are that a strike of newsprint and sulphite mill workers will be declared during the next several weeks. Locals of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers have voted almost unanimously to reject the 30 per cent reduction in wages and an increase in hours of from eight to nine a day offered them by paper manufacturers on April 8, and a strike seems inevitable, to become effective partially on May 1 and completely on May 11, unless an agreement is reached in the interim. Newsprint manufacturers appear determined to press their proposal, whereas the union leaders seem just as determined to oppose the new wage and working schedules.

It is understood that newsprint producers already have begun to make ready for the threatened strike and that they are operating their mills at capacity in an effort to store up as large a surplus of their product as possible to tide them over a strike period should the strike occur. Paper men cannot comprehend how the union leaders can call a strike at this time. It is openly conceded that there is sufficient newsprint in the hands of publishers and producers to fill the needs of publishers at the prevailing rate of consumption for quite a lengthy period, and it is also felt that labor conditions are such as to make the present a most inopportune time for a strike.

The newsprint market has been little affected by the talk of a strike. There are fairly large amounts on offer; more, in fact, than publishers seem to want, and most of the spot sales being made are at low prices. Contract quotations are maintained, but a majority of transactions in the spot market are at no more than 4.50 cents per pound for newsprint in standard rolls.

The book paper situation is little changed. Demand is limited and yet, if anything, orders are increasing in volume rather than declining. Mills are not busy — few of them are running at anywhere near capacity — and this of course keeps prices in an easy position. Some grades of fine papers, chiefly the cheaper-priced lines, are moving in better quantity, and mills are gradually but slowly enlarging their production. Wrappings are quiet and demand for fine tissues has improved but slightly, if at all, although coarse tissues such as toilet paper, napkins and towels, are in comparatively active call. Reports received several days ago say that one of the largest producing mills in the country, situated in the vicinity of Philadelphia, of this class of paper is running at full capacity and is finding an outlet for practically all of its output.

Boards are still sought in hand-to-mouth quantities and prices are irregular and on low levels. A majority of manufacturers in the East are quoting $35 a ton on plain chip and $40 on filled news board f.o.b. mills, but there are several who are accepting orders at substantially under these figures. Board makers are in a bad way for want of business and are operating at greatly curtailed schedule.

GROUND WOOD — Quotations on mechanical wood pulp have sunk to lower levels. Offerings of spruce ground wood of prime quality at $25 per ton f.o.b. grinding mills have been recorded, and in at least one instance an even cheaper price has been quoted, a certain dealer in New York having offered ground wood manufactured in Canada for shipment to the States on schooners at a basis of $22 per ton at the producing plant, figuring out at around $35 to $38 per ton delivered at consuming points in New York State and nearby points in the East. Demand continues very narrow. Consumers are coming into view as buyers only when immediately requiring supplies and then are confining orders to cover pulp sufficient to fill their requirements for a short time. There are some producers who are quoting $30 and $35, and even higher, at mills, but it seems doubtful that they are managing to effect sales at such figures when ground wood is available at so much lower costs.

CHEMICAL PULP.—The chemical wood pulp trade is steadfastly marking time. There is little demand of note coming from consuming quarters, and the scattered transactions recorded off and on scarcely involve enough pulp to establish a market. Prices are irregular, and largely nominal. Buyers invariably are securing wanted supplies at considerable concessions from the prices asked by manufacturers and importers, and so many and varied prices are heard that it becomes very much a matter of guesswork trying to ascertain what really constitute market values. Most domestic producers of bleached sulphite are quoting 6.50 cents a pound for No. 1 bleached, and around 3.50 cents on news grade sulphite, yet such sales as are accomplished are invariably at half a cent a pound under these prices. Quotations on imported pulp now in this country are being fre-

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quently slashed in order to effect sales, and prices on foreign pulps are relatively more unsettled than are those on domestic grades.

RAGS. — Prices on papermaking rags continue on the downtrend and there has been no perceptible expansion of demand. Mills are buying in cautious fashion, almost entirely against direct requirements, and it is problematical at just how low most grades can be obtained. Offerings of No. 1 white shirt cuttings at around 10.50 cents a pound f.o.b. New York have been reported, without attracting buyers, while No. 1 washables are available to mills at 5.25 cents at shipping points, unbleached muslins at 8.25 cents fancy shirt cuttings at 7 cents, black silesias at 3.75 cents and white lawns at 10 cents. Roofing rags have sold down to 85 cents per hundred pounds at dealers' points for No. 1 packing, and No. 2 packing has been bought in some cases at as cheaply as 65 to 70 cents. Old whites are gradually easing off in price, as are old thirds and blues.

PAPER STOCK. — Prices on some grades of old paper have steadied to an extent, this apparently being due not to any important increase in demand but to the prevalence of values on such low levels that producers in a good many cases have stopped putting up material, finding that it is a losing proposition under present prices. There has been a little more inquiry for old books and magazines, and No. 1 packing is bringing 85 to 90 cents per hundred f.o.b. New York, while in the Middle West higher prices are reported to obtain. Shavings are quoted in the vicinity of 3 cents per pound on No. 1 hard white and 2 cents on No. 1 soft white shavings, while old No. 1 kraft paper is said to be attracting more buyers at a quotable range of between 1.35 and 1.50 cents at shipping points. Folded newspapers are freely available to board mills at 35 to 40 cents a hundred and No. 1 mixed papers at 25 cents, and it is the contention of dealers that as soon as demand for these grades shows the least expansion prices will advance.

OLD ROPE AND BAGGING — Old rope is in comparatively good demand from paper mills and No. 1 manila rope is readily fetching around 3.75 cents per pound at producing points, with some reported heard of sales up to 4 cents. Old bagging, on the other hand, continues to be neglected by consumers and is available at very nearly any figure which buyers are willing to offer.

A consideration of petty circumstances is the tomb of great things.

(Continued from page 462)

diameter, and all upper rolls 16″ diameter. All calender roll bearings are bronze bushed and ring-oiling.

The reel is of the "Pope" patented surface type, designed for easy changing of reels at high speed. Compressed air is again used to carry the paper from the calender to the reel, thus making the passing of the paper practically automatic from end to end of the machine. A set of unreeling stands and a Warren double drum winder complete the machine, which is almost 300 feet long from breast roll to winder.

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Both machines are driven by the Harland Engineering Company's electric drive, with patented speed interlock, using individual motors on each unit, there being one motor for the fourdrinier part driving the suction couch roll, one motor for each of the four presses, three motors driving the dryer part, and one motor driving the calender and Pope surface reel.

Installed in a splendidly built and well lighted machine room these mammoth machines present a magnificent appearance that excels anything heretofore built, and form a lasting record that the Dominion Engineering Works, Limited may well be proud of.

UNBOUGHT PURCHASES.

"If you really need a thing, **you pay for it,** whether you buy it or not."—Gus Mohme.

There is no economy in doing without things that cost less labor than their lack occasions.

It is old wisdom, as old as the first man that planted a crop or built a house. But it is hard for us to remember it. It seems so much cheaper to "do without" until prices go down, until exchange is again at par, until—the millenium. Meanwhile we will make shift to use paper not quite good enough for its purpose, to use machinery not quite modern enough, not quite productive enough, and to use labor not quite effieient enough.

Make-shift is the world's chief extravagance.

A little better paper, and the goods are protected; a little faster machinery, and your "overhead" per unit is reduced; an elevating truck, and you save in wages, time, and injury to goods.—The Caravel.

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Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XVIX. GARDENVALE, P. Que., May 5th, 1921. No. 18

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J. NEWELL STEPHENSON, M.S., Editor.

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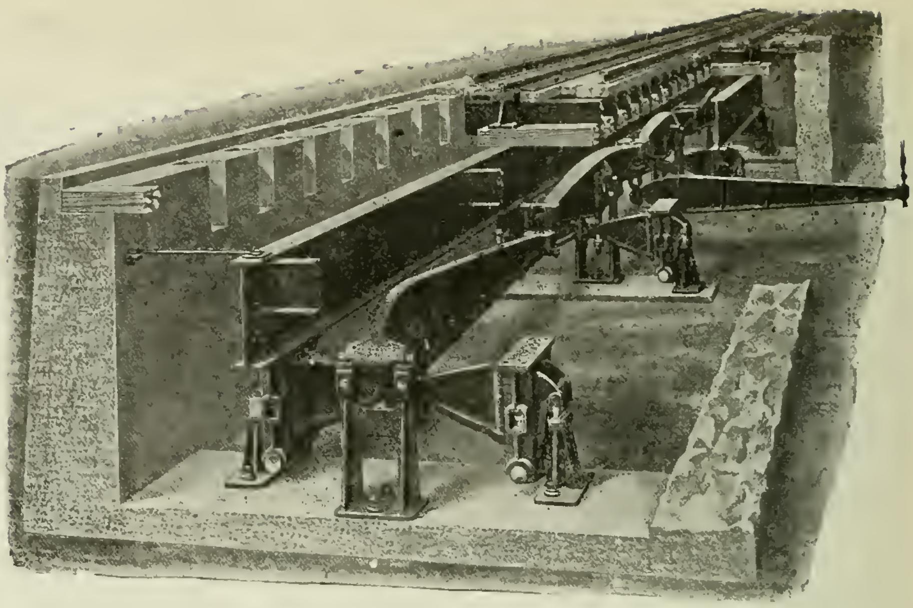

Pulp and paper mills are realizing more and more the necessity of accurate and durable weighing machines. The increased weight of rolling stock and the corresponding increase in capacities of freight cars, together with the rapidity with which all operations must be performed, demand the reliable construction which is an important feature of

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EDITORIAL

THE RESEARCH INSTITUTE.

Echoes from Ottawa indicate that there is a discussion going on at the Canadian capital with regard to the bill to establish a Federal Research Institute which recently came up in Parliament for the second reading. Sir George Foster, in outlining some of the advantages that might accrue, cited a number of successful experiments which had been carried into commercial operation under the auspices of the Advisory Council for Scientific and Industrial Research. Among these instances was mentioned the digging and drying of peat for fuel by such improved methods as to enable the operation to be done at a profit. Similar success attended the briquetting of Western lignites.

While the Pulp and Paper Industry is naturally most interested in ways in which the Institute can improve methods for using pulp and paper making materials, to discover new ones, and to prevent economic wastes, yet it is well to bear in mind that in establishing the proposed research institute the Government aims not to serve any particular industry but to benefit the whole Canadian people. Of course in improving any methods of manufacture or utilizing the products of our enterprise there is, at least indirectly, a benefit to every Canadian but this is not always realized; consequently it is sometimes difficult for some people to comprehend the value of legislation or action for which does not affect them directly. The instances used by Sir George to show what had been done likewise illustrate the great possibility of scientific research intelligently and diligently appled to almost every line of Canadian activity. The improvement in our agriculture prosperity has been reached by the path of progress marked out by the scientific investigation of a number of the principal factors involved. The selection of seeds for grain suitable to certain soils and climates has placed Canada well to the front as a producer of food stuffs and the scientific selection and breeding of stock is proving its value in the success of Canadian breeders. Scientific research and technical skill converted cobalt, which had become a drug on the market, into an essential ingredient of one of the most remarkable alloy steels. These are but some of the accomplishments of scientific research in Canada.

In the field of pulp and paper much fundamental work has been accomplished. Satisfactory methods of analysis have been devised for ascertaining the cellulose content of wood and analyses of typical woods have been carried out so that we know the maximum paper making fibre obtainable from various types of pulpwood and this together with fibre length measurements and the determination of density of the wood gives us data on which to base a calculation of comparative values for the mill. Investigations have brought out some interesting and important fundamental data with regard to the power used in beating, and the cause of rosin troubles on the paper machine have been traced out. The conditions encouraging the growth of wood destroying fungi have been investigated and some means of remedying it have been discovered. Methods have also been developed for adequate protection of pulpwood from fire and incidently from fungus growth. Coming back to the forest we could mention a number of scientific studies which must eventually prove of enormous value to the wood using industries of this country and this continent.

This record of accomplishment is not altogether to be credited to Government work but much of it has been done at least with the co-operation of Provincial and Federal departments. A much longer list could be recited and even this would be but an indication of the possibilities rather than a boundary of accomplishment. There are still countless problems of a fundamental nature as well as of individual application awaiting solution. Some of them could best be investigated by a central Government institution. Others require the atmosphere and apparatus of a manufacturing plant. All of them will be most successfully and satisfactorily solved by the organization of all facilities for scientific attack. Canada has extensive natural resources which have only been touched, undeveloped water powers hold possibilities for industrial development of untold extent and wealth producing power. Some resources are being exploited rather than developed and if they are to be maintained in a permanently productive condition scientific research must be called in to develop new uses and improve on present conditions.

There is naturally some feeling that certain established departments of limited scope are the only effective organizations for dealing with certain problems but as any success of these smaller units is due to the co-operation of individuals therein, so the larger organization will be successful in such measure as all bodies merged in it will cooperate. A much more effective college course can be arranged by combining a selection of the most appropriate units from several departments of the University than where it is necessary for a few teachers to cover indifferently a variety of subjects. The Research Institute will correspond to the University where there will be gathered the experts in each line who would correspond in educational work to the authority, say on chemistry, in one college, physics in another, electricity in a third and so on. Furthermore, instead of having either a duplication of high grade apparatus in several places or a distribution of single expensive pieces where it would be exceedingly awkward to make effective use of them, one would have in one place absolutely the best equipment available. The benefit of such organization of personnel and apparatus in these days of organized effort will surely be apparent in anyone who gives intelligent thought to the subject and the establishment of the research institution will have their full support.

AN ASSOCIATION RENDERING REAL SERVICE.

Probably few associations have such a record of constructive suggestive assistance to the industry represented and to the constituency served by that industry as the efforts of the Canadian Pulp and Paper Association in the organized work which is now being carried on. There are plenty of people who are eloquent enough in pointing out conditions that should be remedied but those who can tell how improvement can be effectively accomplished are few. The Pulp and Paper Association is fortunate indeed and the industry is to be congratulated in having the service of men who can devise such helpful suggestions as are coming out from the offices in the Drummond Bldg., Montreal. Take, for instance, the Bulletin No. 2 entitled "Broadsides, The Trail Breakers of Business". Here we have not only a definition of what the broadside is but one of the finest illustrations that can be imagined, of the thing itself; paper, printing, arrangement, and expression, all carrying direct to the user something which carries an idea which cannot help but be grasped and made use of.

Another helpful hint is a circular letter which is so cleverly prepared as to give the impression of a personal communication which it actually becomes by the personal signature of the head of the Association's Publicity Department. This letter on direct advertising tells the printer in plain English, how to improve his own business by employing himself to advertise himself. Such work is not only helpful to the manufacturer of paper but it is helpful to the printer in showing him how to get more business; it is helpful to the merchant and the manufacturer in suggesting more efficient ways of advertising their goods and it is helpful to the consumer in bringing to his attention things that he might not be aware of but which could be used by him for convenience or profit. Finally the campaign encouraging the wider use of Canadian goods by the more extensive use of advertising on Canadian made paper will react favorably on our trade balance with other countries and enable us to purchase such raw material as must be imported and such machinery as it is not at present economical to produce in Canada with less economic penalty because of adverse exchange.

LESSONS FROM THE TRADE REPORT.

On April 30th the External Trade Division of the Dominion Bureau of Statistics sent out from the offices of the Department of Trade and Commerce the table printed on page 474 of this issue setting forth the exports of paper, wood pulp and pulpwood for the past year and figures for comparison with previous years and likewise for the month of March. Some very interesting comparisons are evident. For the month of March miscellaneous grades of paper suffered a decrease in value from $1,200,965 to $667,096 but the total exports of paper for the month increased somewhat over $2,000,000. Wood pulp fell off in value almost 50 per cent., the principal decrease being in unbleached sulphite pulp, while bleached sulphite pulp showed a slight increase. It is interesting to note that pulpwood for the month increased in amount from 48,000 cords to 177,000 and in value from $497,984 to $2,342,495.

With regard to the distribution of paper we find that the United Kingdom took less than 1/3 of the amount reported for March 1920 while the United States took nearly 30 per cent. more and other countries over 100 per cent. more in March 1921 than in March 1920. For the same periods we find that the United Kingdom took less than ¼ as much wood pulp, the United States and other countries each taking about 60 per cent.

Looking at the annual statistics we find a very encouraging growth during the last three years. The total value of pulp and paper making materials exported being $97,956,280 in 1919, $113,091,704 in 1920 and $185,168,938 in 1921, for the year ending with March. We have thus accomplished a growth of nearly 100 per cent. in three years. Without exception the values of all items increased consistently during this period although the quantities of sulphite pulp and unbleached sulphite and groundwood pulp showed a shrinkage which was most marked in the case of groundwood, the quantity of which decreased by about 35 per cent. although the value nearly doubled. The total exports of pulp decreased in quantity about 7 per cent. while the value increased nearly $20,000,000. The distribution of these various products remains relatively the same, the United States being far in the lead in every case, in fact the total value of exports of paper, pulp and pulpwood to our neighbor last year amounted to $151,650,268 of which $21,350,000 represented pulp wood.

Each of the years represented would be considered a satisfactory period and the value of these exports is being more and more appreciated by Canadians. The current fiscal year has yet 11 months to recover from the present depression and if instead of an increase of $72,000,000 as between 1920 and 1921 we experience the more moderate advance of $15,000,000 as between 1919 and 1920 we shall have brought our exports of pulp and paper past the $200,000,000 mark.

Ontario Pulp and Paper Makers' Safety Meeting.

The annual meeting of the Ontario Pulp and Paper Makers' Safety Association was held in Toronto on April 20th, with George Carruthers presiding. Practically all of the pulp and paper mills in the province were represented at the meeting. The president's address and the annual statement of the Safety Engineer A. P. Costigane proved of deep interest and a statement showing receipts and disbursements, signed by P. S. Ross & Son, chartered accountants, were presented and adopted. The following directors were appointed: George Carruthers, C. Nelson Gain, Col. C. H. L. Jones, H. F. E. Kent, L. R. Wilson and P. J. Murer. Following the annual meeting the board of directors met and re-elected George Carruthers president and C. Nelson vice-president.

During the general session the situation as regards accident prevention in the pulp and paper mills was gone into carefully and some suggestions made whereby the educational work being carried on by the association may be made even more efficient. Those present showed great interest in the various steps taken during the year to prevent accidents, and expressed the feeling that, stimulated by the competition that is now going on in the pulp and paper mills for the best accident prevention record during the current year, the results will constitute an even better showing than during 1921. The president's and engineer's statements follow.

THE PRESIDENT'S ADDRESS.

By GEORGE CARRUTHERS, President, Interlake Tissue Mills.

Since being appointed President of the Ontario Pulp and Paper Makers' Safety Association, last year, I have followed closely and with great interest the educational work being carried on in the effort to prevent accidents. I am convinced that the work is very necessary and is worthy of the sincere support of the pulp and paper mills included in the membership of this Association. My own experience of the effect on employees has convinced me that the fact that a company is sincerely interested in the well being of all its people creates a feeling of loyalty which shows up in many little ways during the everyday working of the mill. This feeling of loyalty is one that we should value highly and encourage in every way possible. The majority of the mill managers are sincerely interested in the movement and help largely in carrying on the work. Unfortunately a minority, after four years of effort on the part of this Association, are indifferent and give little or no assistance. This attitude is not fair to our engineer. No matter how sincere the efforts of our engineer may be we cannot look for marked progress unless his efforts are backed by the management. It is not reasonable to expect the men in such mills to believe in a movement, towards which the management shows indifference or veiled hostility. In the face of ever increasing cost of compensation it is hard to conceive the reason for indifference on the part of some of the mills. Looking over the reports issued by the Workmen's Compensation Board I find the cost of compensation for 1918 was $134,397,91. In 1919 the cost increased to $251,057.95. The figures for 1920 are not yet available, but you may be sure the cost will not be less than in 1919. This Association is endeavouring to reduce this tax on our industry by striking at the root cause viz:—accidents, and for this reason we ask for the fullest co-operation on the part of the management of all mills. The accident statistics for the year 1920 show a large increase in comparison with 1919. The actual figures on this head are given on our Engineer's report.

In order to stimulate interest among employees of all mills a competition for the best accident record for the year 1921 has been inaugurated. The mills are divided into two groups, and the prizes take the form of two shields mounted on wooden bases, each trophy being accompanied by a commemoration flag. The shields will be competed for each year, but the flags remain the property of the winners. The interest already shown in this competition is a guarantee of success.

Workmen's Compensation Act.

During the year an amendment has been added to the Act increasing the scale of compensation from 55 p.c. to 66-2/3 p.c. of earnings, with a corresponding increase in pension awards, and I understand an effort will be made in the near future to further increase this scale. Organized opposition on the part of the manufacturers is the only hope of preventing the scale of compensation reaching 100 p.c.

The merit rating system of assessment is still in operation. Under this system each firm's assessment is regulated by the cost of their own accidents. Companies with a good accident record receive a merit rebate, whereas companies whose accidents during the year cost more than the estimated amount are called on to pay a supplementary assessment. During the year 1920, on account of the year 1919, merit refunds numbered 10 amounting to $2,912.27, and the demerit charges numbered 14 amounting to $19,142.24.

Finance.

The audited statement of receipts and disbursements, copies of which are available, shows the cost of running the Association during the year amounted to $4,964.55 as compared with $4,000.81 for the year 1919. The figure for 1920 includes an item of $232.90 for office furniture.

SECRETARY & ENGINEER'S REPORT.

By A. P. COSTIGANE.

The work of accident prevention during the year 1920 has been carried on as vigorously as heretofore, but the results are disappointing as compared with the previous three years. Both the number and severity of accidents during the period under review show a marked increase. It is difficult to account for this result, as the interest and co-operation of both employers and employees is as keen if not keener than ever before; still accidents are on the increase. There is nothing tangible to account for the increase, but possibly the payment by the Workmen's Compensation Board of medical fees and an increased scale of compensation has led to the reporting of accidents that in previous years passed unnoticed. This, however, does not account for the deplorable increase in fatal accidents.

Employees' Safety Meetings.

Educational activity by means of showing special safety films had to be abandoned last year owing to the impossibility of importing suitable films from the United States due to the embargo on express traffic. Meetings of Safety Committees were held at various points, but no general meeting of employees such as were held during 1919 was convened during 1920 owing to reason already stated. During the current year if suitable films can be secured an effort will be made to organize meetings along the same lines as those that proved so successful during 1919.

Safety Calendar.

The 1921 Safety Calendar produced during 1920 was faborably received. From information gleaned since the calendar was distributed there is no room for doubt that this method of education is appreciated by the employees and is of great service in keeping accident prevention to the fore day in and day out during the whole year. A calendar for 1922 is now being prepared and it is probable that the price of paper and printing etc. will permit of a reduction in price.

During the year the following meetings and conventions were attended by your Engineer:

(1) Annual meeting of the Canadian Pulp & Paper Assoc. and Technical Section.

(2) Meetings of Committee on Education, T.A.P.P.I. New York, Toronto and Saratoga Springs.

(3) Ontario Safety League Convention—Toronto.

(4) Meetings of Executive Committee Ontario Safety League, Toronto, Hamilton.

(5) Annual Congress National Safety Council—Milwaukee.

Workmen's Compensation Act.

An important amendment to the Workmen's Compensation Act was put into force July 1920, under which scale of compensation was increased from 55 p.c. to 66-2/3 p.c. of earnings with a corresponding increase in pension awards. Otherwise the Act remained the same as in 1919. The amendment referred to has added greatly to the cost of compensation.

Workmen's Compensation Board's Report 1919.

The Board's report for 1919 issued during 1920 shows a decrease in the total of compensatable accidents in all industries from 31,422 non-fatal and 194 deaths in 1918 to 27,788 non-fatal and 197 deaths in 1919, or a decrease of 8.38 p.c. in non-fatal accidents. During the same period the number of full time workers decreased from 330,310 in 1918 to 317,873 in 1919, a decrease of 3.76 p.c., so that the frequency of accidents during these two years, taking all industries together, shows a decrease even when allowance has been made for the decrease in full year workers during the same period.

Taking the Pulp and Paper Industry Only and Including Woods Operations.

The total number of compensatable accidents increased from 1461 non-fatal and 16 deaths in 1918 to 1563 non-fatal and 13 deaths in 1919, equal to an increase of 7 p.c. in non-fatal and a decrease of 18.7 p.c. in fatal accidents. During the same period the total number of full year workers increased only from 10,045 to 10,250 or 1.9 p.c. The total time lost decreased from 22,489 days in 1918 to 21,003 days in 1919, equal to 6.6 p.c. The above figures show that the frequency of accidents increased approximately 5 p.c. while the severity improved 6.6 p.c.

The total amount collected from class 2 was $252,747.36 from which was deducted a debit balance of $1,689.41 brought forward from 1918, leaving $251,057.95 available for 1919 liabilities. Of this amount $42,998.28 was paid out in compensation exclusive of pensions, $46,047.96 was taken as the capital value of pensions awarded, $4,039.68 was paid to Safety Association, $2,790.93 administration expenses, $1,635.00 for deferred compensation, $15,015.60 paid for medical aid, $1,455.07 for disaster reserve, $20,086.10 for continuing disability, $57,757.50 for oustanding accidents, $5,831.85 for estimated medical aid, making a grand total of $251,057.95 charged against the class including a provisional balance of $53,399.98 to be carried forward.

On the basis of the total amount charged against the class for 1918, every $100, contributed by the employers, would be divided as follows:—

	1919	1918	1917	1916
Compensation other than pensions	17.12	28.37	28.46	24.44
Deferred obligations ..	74.18	57.40	60.35	69.29
Paid to Safety Assoc. ..	1.61	2.81	3.84	3.85
Administration Expenses	1.11	1.21	.87	2.42
Medical Aid	5.98	10.11	6.48	*

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* Incomplete year.

Accidents Reported During 1920 Exclusive of Woods Operations.

The total number of accidents exclusive of woods operations reported by the mills during the year 1920 was 1455 non-fatal and 17 fatal accidents, compared with 1032 non-fatal and 8 fatal accidents for the year 1919. This means an increase of 40.98 per cent in non-fatal and an increase of 112.5 per cent in fatal accidents. During the same period the total number of full year workers increased from 7159 to 7892, or an increase of 10.23 per cent.

The total time lost increased from 14,251 days in 1919 to 25,453 days in 1920, or in other words an increase of 78.6 per cent.

The figures are very disappointing, as even when allowance is made for the increase in full year workers of 10.23 per cent, both the frequency and severity of accidents shows a marked increase during the period under review. It is to be hoped that the competition now going on in the mills will result in a different and more satisfactory story being told next year.

COMPARISON TABLE 1917-1918-1919-1920.

(Woods Operations Not Included.)

	1917	1918	1919	1920
Accidents non-fatal ..	852	1124	1032	1455
Increase per cent	...	36.24	....	40.98
Decrease per cent	...	....	8.2	....
Accidents fatal	7	11	8	17
Increase per cent	...	37.14	....	112.5
Decrease per cent	...	....	27.27	....
Full year workers	6792	7064	7159	7892
Increase per cent	....	4	1.3	10.23
Time lost (in days) ..	14249	18650	14251	25453
Time lost per full year worker (in full	2.1	2.63	1.99	3.22

It is with great regret that I have to submit a report for 1920 which shows a large increase in accidents during that period both as regards frequency and severity. There is no cause that I know of that can be pointed to definitely as being responsible. True there has been unprecedented activity during the year in new construction, and although purely construction accidents have been excluded from the statistics, still the usual environment of any plant while construction is going on is upset and the danger of accidents under general heads is greatly increased, but it is almost impossible to arrive at a reasonably accurate estimate of the increased hazard.

Thinking back over the period covered by this report and keeping in mind the conditions ruling, it seems to me very certain that progress can best be looked for during the current year by increasing the effort along educational lines. One step along this line has already been taken in the inauguration of an Accident Prevention Competition, full particulars of which have been sent to every mill. It is hoped that this competition will appeal to the sporting instincts of the individual, arouse a feeling of plant pride and a determination to secure a trophy. If the individual can be favorably impressed, and I think he can, then the individual acting collectively in each mill should make a wonderful record for 1921. The trophies will take the forms of shields of attractive designs mounted on wood secured from the ruins of the first mill operated in Ontario. The mounting of the shields in this way will add an historical value to the trophies. The mills are divided into two groups for the purpose of competition:

(1) Mills employing 200 people and up.

(2) All other mills.

By this method the disadvantages of the large mills competing with small mills will be avoided. Practically all the mills visited since the competition started (Jan. 1st 1921) have expressed interest and enthusiasm, and if they act as they indicated at safety committee meetings, then the competition should be keenly fought.

Some months ago your Engineer was appointed an honorary member of the American Pulp and Paper Mill Superintendents' Association and had the privilege of addressing the members at a meeting held at Niagara Falls early this year. A strong effort was made to enlist the active sympathies of the Superintendents, and judging from conversations with individuals after the meeting, the economic aspect of accident prevention as presented to the members has awakened a much warmer interest in our campaign. Attendance at future meetings should have the effect of increasing this feeling.

Note: — A chart classifying all accidents reported by the Pulp and Mills during the year 1917-18-19-20 accompanied Mr. Costigane's report.

FOREST PROTECTION PROPAGANDA BY FILMS.

About four hundred people, at Matane, P. Q., witnessed the reproducting on the screen of two films dealing with the forest. These films were exhibited by M. J. D. Brulé, of the Southern St. Lawrence Forest Protective Association, Ltd. They represented, one, the operations of Messrs. Price Bros. and Co., Ltd., in the Saguenay district, and the other, an educational film entitled "The Enemy of the Forest".

These films were shown in view of giving the public in general and the people of Matane, in particular, an idea of the importance of forest protection.

Price Bros. film was shown to demonstrate the turning into paper of hundreds of acres of virgin forest. This film has been described in the Pulp and Paper Magazine.

"The Enemy of the Forest". — This film was shown to demonstrate the difference there is between carefulness and negligence.

If on a pic-nic, put out your fire. If smoking in the bush, don't throw away burning cigarettes, lighted matches or cigar butts which might set fire.

Each Province has a system of forest protection that puts a ranger on the highest points of the forest and telephone to communicate with workers. Quebec is now working on this scheme, and in a few years we will have developed to a high degree of efficiency.

A GENEROUS EXAMPLE.

The Canadian Forestry Association has proved itself in the foremost rank, as an agency for impressing on the public the importance of Canada's forest resources and the absolute necessity of providing adequate protection. The association through its magazine, by lectures, the exhibition of moving pictures and by the use of demonstration cars, and through the medium of the public press as well as by direct appeal by bulletin to its members and by posters to campers and fishermen, has done the Canadian people a service which cannot be measured in dollars and cents. Such work however, cannot be done without financial support and this has come generously from many of those who appreciate the good work of the association. Among those enthusiastic supporters is Mr. F. J. D. Barnjum. Fortunately for the association, Mr. Barnjum is able to contribute generously as well as to devote a great deal of his time and ability to the conservation of Canada's forests. We reproduce Mr. Barnjum's letter to the secretary of the Association in the hope that his example may influence others to contribute in proportion to their means.

April 20th., 1921.

Mr. Robson Black, Secretary.
Canadian Forestry Association,
Ottawa, Ont.

Dear Mr. Black:—

I am duplicating my subscription of last year to the Canadian Forestry Association, and am enclosing my cheque herewith for $1,000.00, payable at par at any branch of the Royal Bank of Canada, to cover amount of same.

The small amount of snowfall of the past winter will probably mean low water and consequent dry conditions in the woods the coming spring and summer. This, with the enormous amount of dead dry trees which were killed by the spruce bud worm will increase the fire hazard to an extent greater than ever known in the history of timber lands in the Province of Quebec and New Brunswick, and I would urge upon all railroads, Forest Fire Protective Associations and the public in general for increased vigilance in the prevention and protection of our forests from destruction by fire. This is something that every man, woman and child in Canada has a personal interest in, as every mature forest tree that is killed means a matter of one hundred years to replace.

The Canadian Forestry Association is doing such good work that I feel it should have the hearty support of every citizen of Canada, and there never was a time in the history of Canada when the protection of our forests was of greater importance.

FRANK J. D. BARNJUM.

EXPORTS OF PAPER, WOOD PULP AND PULP WOOD

March 1920 and 1921; and twelve months ending March 1919, 1920 and 1921.

Paper		Month of March		Twelve months ended March		
		1920	1921	1919	1920	1921
Printing paper—						
Book paper	Cwt.	4,363	4,620	....	47,573	65,194
	$	41,937	56,187	....	436,330	779,763
Newsprint paper	Cwt.	1,426,149	1,515,468	....	14,272,513	15,112,586
	$	6,186,305	9,162,330	....	53,203,792	78,222,137
Printing paper	Cwt.	....	....	13,248,342	....	....
	$	....	....	40,718,021	....	....
Other paper	$	1,002,965	667,096	7,144,888	9,613,297	12,401,407
Total paper	$	7,231,207	9,885,613	47,862,209	63,253,419	92,103,307
Wood pulp—						
Sulphate (kraft)	Cwt.	258,020	139,175	....	2,518,022	2,354,002
	$	920,420	596,756	....	8,327,045	12,160,735
Sulphite, bleached	Cwt.	152,988	157,333	....	1,220,764	1,941,922
	$	841,699	1,005,260	....	6,291,452	15,195,065
Sulphite, unbleached	Cwt.	519,216	162,913	....	4,863,156	4,785,040
	$	2,113,162	635,755	....	18,381,566	27,704,419
Chemically prepared	Cwt.	....	....	8,332,930	....	....
	$	....	....	30,226,856	....	....
Mechanically prepared	Cwt.	289,092	139,868	3,508,726	6,787,640	5,282,042
	$	562,308	284,092	4,479,915	8,383,419	16,491,818
Total wood pulp	Cwt.	1,219,316	589,287	11,841,656	15,389,582	14,363,006
	$	4,437,589	2,321,863	34,706,771	41,383,482	71,552,037
Pulp wood	Cord	47,904	177,318	1,597,042	838,732	1,615,467
	$	497,984	2,342,495	15,366,600	8,454,803	21,513,594
Country of Destination.						
Paper and manufactures of—						
To United Kingdom	$	260,692	84,859	1,040,857	4,813,577	3,845,428
United States	$	5,899,762	7,571,169	38,621,265	50,367,339	72,170,129
Other Countries	$	1,070,752	2,229,585	8,200,787	8,072,503	16,087,750
Wood pulp—						
To United Kingdom	$	483,732	112,512	614,432	5,014,400	7,897,602
United States	$	3,214,373	1,901,991	30,674,820	31,316,753	57,966,545
Other Countries	$	739,484	507,360	3,417,519	5,052,329	5,687,890
Pulp wood—						
To United Kingdom	$	....	....	....	....	....
United States	$	479,984	2,342,496	15,386,600	8,454,803	21,513,594
Other Countries	$	....	....	....	....	....
Total paper, wood pulp and pulp wood—						
To United Kingdom	$	744,424	197,371	1,655,289	9,827,977	11,743,030
United States	$	9,612,120	11,815,655	84,682,685	90,138,895	151,650,268
Other Countries	$	1,810.236	2,736,945	11,618,306	13,124,832	21,775,640
Totals	$	12,166,780	14,749,971	97,956.280	113,091,704	185,168,938

The record of exports and the development in this particular business is an accomplishment for the Canadian Pulp and Paper Industry to be modestly proud of. (See editorial comment on page 470.)

CHANGES IN TECHNICAL SECTION MEMBERSHIP.

Mr. G. Meerbergen and Mr. T. F. McHenry, both of the Belgo Canadian Pulp and Paper Company, Ltd., are now **Full Members**. These gentlemen were formerly Associate members.

Mr. G. H. Lafontaine, of the Brompton Pulp & Paper Company, Ltd., is now a **Junior Member**. He was formerly a Student member.

New members were elected as follows:

A. J. Edward, International Paper Company, St. Maurice Lumber Company, Three Rivers, Que.

W. G. Mitchell, Canadian Export Paper Co., Sun Life Bldg., Montreal.

R. L. Weldon, Three Rivers Pulp & Paper Co., 511 St. Catherine St. W., Montreal.

John J. O'Sullivan, Three Rivers Pulp & Paper Co., Ltd., Drummond Building, Montreal.

Notes of the American Newspaper Publishers' Convention.

Publishers and editors from all parts of the country, numbering about 700, last week attended the thirty-fourth convention of the American Newspaper Publishers Association in the Waldorf-Astoria Hotel, New York City. Many of those present in the gatherings were present also at the annual meeting arranged by the Associated Press.

Opinions expressed by representative pulishers and others on general business and industrial conditions in the sections of the country under their direct observation indicated that the period of business depression has been passed. The general tone was optimistic—more so in the opinion of men from the West than from the East, and the latter were more sanguine than those from the South.

A warning against a possible future demoralization in the newsprint market was sounded by R. T. Williams, president of the publishers' association, in his address opening the convention. Mr. Williams said that newspaper rates should not be allowed to descend. He urged upon newspaper publishers the need of co-operating with government forces in restoring world peace and bringing business conditions back to normalcy, and especially in repealing unnecessary wartime legislation and obnoxious features of federal taxation laws. He held that these were largely responsible for the upsetting of sanely conducted business. Mr. Williams pointed out that newspapers must meet the problems in both materials and labor, since the average contract price of newsprint for the first six months of this year is higher than the average contract price for all last year, and labor is at the highest point known. He made the prediction that the newspaper of the future will be smaller, owing to this increased cost of production.

A resolution was adopted taking a strong stand in opposition to the concerted movement of union labor in the printing trades for a forty-four instead of a forty-eight hour week. In directing that the president of the association name a special committee to negotiate new arbitration contracts with the four international unions, the convention finally committed itself to the principle that every issue, without exception, upon which employers and employees were unable to agree should be determined by arbitration.

Figures showing the increase in wages that have taken place in the paper and pulp mills since 1914, were contained in a memorandum calling attention to the negotiations which have been carried between paper companies and their employees. A table prepared by the National Industrial Conference Board is cited in the memorandum. This gives the average weekly wages of male employees in thirty-two paper manufacturing establishments in the United States from the years 1911 to 1919 inclusive. These figures, all given for Sepember, are as follows: 1914, $12.73; 1915, 12.75; 1916, $15.03; 1917, $19.03; 1918, $22.40; 1919, $22.40. In May, 1920, the papermakers received in these mills a 20 per cent increase in wages, which gave them an approximate wage of $26.88 last year. Figuring the wages of these workers for the entire year it is shown that they received an actual increase of 11 per cent. It is urged upon manufacturers that they would be justified in demanding that the workers agree to a wage reduction of from 15 to 20 per cent, inasmuch as living costs according to the National Industrial Board, 17.6 per cent lower than they were in July of last year. In commenting on this the association says: "No allowance is made in this estimate for the fact that wages, being the largest element in the cost of commodities, must come down before the cost of living can be cut—in other words, not follow, but lead, the reduced cost of living." Speaking of reductions made recently in mills manufacturing fine papers, the memorandum discloses the fact that working men have been willing to accept cuts in wages in order that conditions in that branch of the industry may be adjusted to the generally changed business conditions of the year. The decreases accepted average from 12 to 20 per cent.

Melville E. Stone, for many years secretary and manager of the Associated Press, relinquished his office to become "counsellor and secretary" of the associated newspapers. Frederick Roy Martin, who was appointed Assistant General Manager in 1912, was chosen to take Mr. Stone's place. Mr. Stone's resignation as active director, comes after twenty-eight years of such service with the organizatoin. He is now 73 years old and he has been in the newspaper and news gathering profession since 1864. Mr. Martin, the new general manager, is 50 years old. He was associate editor of the Providence Journal for many years before he went to join the Associated Press. Frank B. Noyes of the Washington Star was re-elected president.

The American Newspaper Publishers Association brought its meetings to a close after selecting its officers for the ensuing term and adopting a resolution expressing "confidence in the high patriotism" of President Warren G. Harding. In this the association "extends felicitations to a fellow publisher who has been called to high responsibilities in a time when great sanity and poise as well as undeviating patriotism are called for at the seat of national government."

R. T. Williams of the Pittsburg Press was re-elected president of the association. Howard Davies of the New York Tribune was elected treasurer. Mr. Davies succeeds George A. Clark of the New York World, Mr. Clark having resigned on account of pressure of business. All other officers of the association were re-elected.

DREW 35-TON LOAD OF LOGS.

Campbellton, N.B., May 1.—What is said to be the largest load of logs ever drawn by two horses was recently hauled by Fred and Harry, two Clydes, each weighing over 1,800 pounds, for the Shives Lumber Company of this town. Fred and Harry drew the load which weighs, as nearly as could be estimated, thirty-five tons, for a quarter of a mile on a logging road from Two Brooks Camp, on the Upsilquitch River, Restigouche County, to a landing on the river bank.

This is pretty good, but expressing the work done in terms of ton-miles it gives this team a score of 9, against 82 for the Abitibi team that hauled 33 tons 2½ miles. Next!

It's all right to put your best foot forward, but you won't get far if you don't follow up with the other one.

Canadian Export Paper Co's Huge Operations

By A. R. R. JONES.

A central sales organization handling the output of many of Canada's leading paper mills — that is the role filled by the Canadian Export Paper Company, Ltd., with its head office in the Sun Life Building, Montreal, and with agencies practically all over the civilized world. The Company is the export selling organization for the Laurentide Company, Ltd.; the Belgo-Canadian Pulp and Paper Company, Ltd.; the Brompton Pulp and Paper Company, Ltd.; the St. Maurice Paper Company, Ltd.; and Price Brothers and Company, Ltd. In addition, it acts as the exclusive export agents for the Howard Smith Paper Mills, Ltd.; the Provincial Paper Mills, Ltd.; and the Interlake Tissue Mills, Ltd.

Mr. Hubert Biermans, managing director of the Belgo-Canadian Pulp and Paper Company, Ltd., is president of the Company, and Mr. J. A. Bothwell, general manager of the Brompton Pulp and Paper Company, Ltd., is vice-president, while the other directors are Mr. George Chahoon, jr., president and general manager of the Laurentide Company, Ltd., and Sir William Price, president of Price Brothers and Company, Ltd.; Mr. G. F. Steele is the general manager.

MR. HUBERT BIERMANS,
President of the Canadian Export Paper Company, Ltd.

The Canadian Export Paper Company, Ltd., is doing a much needed work in connection with the great paper industry of Canada. It is within the last six years or so that the pulp and paper industry has grown from one of comparatively modest and moderate dimensions to one of enormous magnitude. Thirty years ago, Canada's exports of pulp and paper products amounted to but $120 in value. Even ten years ago, they were only worth $10,000,000. Last year their value reached the stupendous total of $185,168,938. Thus the last few years have witnessed an unprecedented and unparaleled demand for the products of the industry. The bulk of Canada's pulp and paper exports goes to the United States. But much of them is also sent to Great Britain, Japan, China, Australia, New Zealand, South Africa, India, Burmah, Ceylon, Cuba, Mexico, Porto Rico, and South and Central America.

With an industry of such tremendous size, and in view of the strenuous conditions of the days in which we live, it was obvious that standardization and centralization had become fundamental necessities of manufacturing. It is to provide for buyers the equivalent in business of the advantages which a "unified command" offers in war—in other words, a central sales organization handling the output of many of Canada's leading paper mills — that the Canadian Export Paper Company was called into being. It is complete as to product, experienced as to requirements, and admirably equipped at all points for the task which it has in hand. For those who call upon its services it provides an organization ready with expert advice and assistance as regards the many problems — and not a few of these are of a somewhat complex kind — connected with paper and its uses, and ready, too, to deliver its product expeditiously and efficiently.

A word was said, just now, relative to the fact that, in present-day conditions in the paper industry, standardization and specialization had become fundamental necessities of manufacturing. Not less fundamental, in connection with the marketing of newsprint, was the necessity of a combined selling association, to cover the export market. As the result of many years' experience, it had been proven that the marketing of newsprint was not on a sound basis. Nor could the field be adequately covered by a series of sales organizations. Moreover, there was, among those in Canada who could read aright the signs of the times, an apprehension, which, in the light of transpired events, has turned out to have been well founded, that the competition to be met with in the future would be very keen. Since the first of this year, the competition from Scandinavia and Germany — particularly, perhaps from the former, has been very keen indeed. It has amply demonstrated the wisdom of the policy of providing one efficient selling organization to compete with similar associations in the countries, just named. It was in 1917 that the Canadian Export Paper Company, Ltd., was organized to market the output of certain news mills. Today it is distributing a combined output of newsprint amounting approximately to twelve hundred tons a day.

This combined output is a huge one. It implies, moreover, the possession of large timber resources. For it must be borne in mind that, as it takes about 1½ cords of wood to make a ton of paper, an output of twelve hundred tons a day means the using up of wood at the rate of eighteen hundred cords a day. In their possession of timber resources, the companies which distribute their export products through the Canadian Export Paper Company, Ltd., are in a splendid position. For they control no less than 15,000 square miles of timber, with adjoining limits comprising 30,000 square miles. Of this timber large bodies suitable for the manufacture of both mechanical pulp, or ground wood, and chemical pulp, or sulphite, are contiguous to great water ways, and hence are easily and expeditiously driven.

Further, the companies distributing their export products through the Canadian Export Company are possessed of many other highly advantageous resources. Prominent among these are great water powers which guarantee a continuity of service at a reasonable rate, stable in flow, with large drainage areas, and with high heads capable of cheap development. Labor is abundant and satisfactory in quality. The tidewater locations are easy of access to the great markets of the world. The big consuming markets are accessible. And, finally, there is the supreme advantage of efficient and expert management.

Any survey of the Canadian Export Paper Company's sphere of operations must not omit mention of the fact that though, when it was organized in 1917, it was formed to take care of the marketing of the output of certain print mills, it now, in addition to the distribution of print, handles exclusively the output of certain mills making other qualities. Among these are the high-grade bonds and writings manufactured by the Howard Smith Paper Mills, Ltd., and the sulphite bonds manufactured at that concern's Crabtree division; the product of the Provincial Paper Mill Company, Ltd., so renowned for its excellence as a book papers; and the high-grade tissue and light weight wrapping, plain and crêpe toilet, etc., manufactured by the Interlake Tissue Mills, Ltd. The department dealing with the distribution of paper others than newsprint is in charge of Mr. Norman Wainwright.

Among its various departments, the Company operates a highly efficient and well equipped statistical department, of which Mr. A. E. Cadman is in charge. In this department the official trade returns of practically every country in the world are received and collated. Constant touch, by means of correspondence, is maintained with the government statistical offices of the various countries, and detailed information of the pulp and paper trade throughout the world,—and much of it of an invaluable kind—is thus obtained. The mode of operation followed in this department is for the records to be collected, converted into Canadian weights and currency, and issued, in the form of monthly, quarterly and annual reports, to the various departments concerned. In this manner close track is kept of the world's markets, sources of supply and trade possibilities. Graphic diagrams are employed where possible to render this information available at a glance. This department also receives the periodicals dealing with all branches of the paper and pulp trade, advertising and printing, in English, French, Norwegian, Swedish, and Spanish. From these periodicals are taken extracts dealing with the paper and pulp situation, prices in the various markets, trade opportunities and matters of interest generally. These reports are then sent out to the various departments of the Company.

A Paper Testing Department is maintained for the purpose of helping to maintain the standard of the products. This department is equipped with paper testers of various kinds, basis weight scales, etc. Of this department also Mr. A. E. Cadman is in charge. The different mills whose products are handled by the Company send in samples of their production each day, and these are tested for quality, appearance and character. Records are kept and sent out to the mills to enable them to compare their products with those of the other mills in the organization. In addition printed samples of newspapers are received daily, tested and checked for weight to ensure customers getting satisfactory service from the paper supplied by the Company. Tests and investigations are also held from time to time on such subjects as the "breaking weight," "percentage stretch" and "ink absorption" of the paper supplied by the Company.

The storage and packing facilities are of the best. As regards the former, all the mills in the organization are very completely equipped to store large stocks of raw material, in order that full production may be maintained in winter-time. In the matter of packing facilities, all the mills in the organization are equipped to pack in compressed, iron-bound bales or cases as required for the export market. Further, the strategic location of the mills in the organization on the main arteries of commerce in Eastern Canada and their proximity to the principal seaports of Eastern Canada and the United States, as well as their connection with the large trunk lines leading to all parts of the latter country, enable the Company to ensure speedy and satisfactory deliveries.

MR. J. A. ROTHWELL
Vice-President of the Canadian Export Paper Co., Ltd.

The general traffic manager is Mr. Guy Tombs, whose department looks after transportation matters for the mills in the organization, as well as the Company's own traffic business, and handles an average of 2,000,000 tons per year. Mr. W. G. Linehan, who is at present in South Africa, is in charge of the overseas department, and Mr. H. W. Cressy is in charge of the order department which distributes orders and controls the tonnage distribution. Mr. N. P. Dalziel is comptroller of the accounting department. The secretary-treasurer of the Company is Mr. E. S. Gallop, and Mr. A. M. Gammell is assistant secretary-treasurer.

The Dominion Envelope and Cartons Ltd. report a record year for 1920 with total shipments of over $1,250,000. They have installed in their new plant in Toronto complete machinery for manufacturing a complete line of confectionery bags which represents probably the most up-to-date equipment for the economical manufacturer of this class of goods.

Parchment and Imitation Parchment.

By Dr. G. SCHUMANN.

(Translated by Dr. Paul Bartholow for Pulp and Paper Magazine.)

The papers usually associated with the name "parchment," possess certain qualities which bear a resemblance more or less close to animal parchment or vellum. One of these, pergamyn, constitutes a grade which may be called a substitute of substitutes, for it differs from imitation parchment in furnish and manufacture, and from vellum in material. However it exceeds both of the finer grades in respect of production and is found today in large quantities on the German market.

In view of the commercial importance of these imitation parchments, it may not be uninteresting here to describe the process of manufacture, so far as it relates to the production of these qualities which distinguish the true parchment. In the preparation of animal parchment the material is the integument, usually of kids or lambs cleaned with lime and stretched smoothly; thinning substances are not used, but the skin is dried and loaded with a slight proportion of white lead coloring matter. It will be seen that we are dealing here with a gelatinous tissue, which is translucent, and which through boiling, is converted into gelatine, or, in a word, completely gelatinized. This gelatinization is the characteristic of parchment paper, and since it can be produced with vegetable fibers, the modern paper, composed of plant tissues, is likewise capable of being gelatinized. The process consists of three operations:

1. Treatment with sulphuric acid, forming the so-called **genuine** parchment paper, or substitute for vellum;

2. Crushing or squeezing of plant tissues forming the substitute for imitation parchment, or pergamyn;

3. Treatment of the moist paper pulp under pressure and calendering on heated rolls, forming the imitation parchment.

1. In this process unsized paper, free from loading, is employed, the so-called raw material for parchment, which is preferably composed of fibers cut sharply, the "pink" pulp from the beaters, bleached cotton fibers or bleached sulphite cellulose, or a mixture of both. The paper in rolls goes to the parchment machine after being drawn through a trough filled with sulphuric acid of 60 Be, and not below 10°. The glass rolls are immersed to such a depth that the surface of each paper roll is wetted 3-12 seconds in the sulphuric acid. The sulphuric acid converts the surface of the fibers into amyloid, a glassy gelatinous mass, like parchment. The interstices are filled, resulting in a thick paste, so that by means of this property two sheets of paper can be run through each pair of calender rolls at the same time. The paper sheet is then run into chests through which a current of fresh water flows, and at the end of the process, the last traces of acid are neutralized in an alkaline bath. The sheet is dried and rewound.

In its characteristic properties the product bears a very close resemblance to animal parchment; it is durable, does not rot, and being unaltered by hot water cannot be repulped or reduced to its original fibrous state by the edgerunner or digester. The simplest test of its quality is to rub the wet paper sheet between the fingers; if it softens and breaks up it is not vellum, nor even sulphuric acid parchment, but substitute pergamyn, produced from paper pulp after beating, as in the following process.

2. This consists in crushing between stones, or in the hollander with the roll considerably above the bedplate, by which means the plant tissues are converted superficially into amyloid. The sheet is gelatinized, closing the pores and giving the character of parchment. In the hollander the pulp swells, becomes very viscous, with a feel like paste, and yields upon the paper machine the so-called imitation parchment or pergamyn. The difference between the two is in the nature of the pulp, although in the case of parchment substitutes the beating of the pulp is carried further, so as to give the appearance of machine-glazed paper and for the most part of whitish color, like the acid parchment. On the other hand pergamyn which is calendered in the wet state, usually under low pressure, easily attains the translucent character of parchment and consequently does not require so long a beating.

3. The calendering described under 2 is adapted in itself to produce a paper sheet like parchment. Writing and printings, through wet calendering, take on a dull green color, since the finest fibers are compressed one upon another by the high pressure, becoming squeezed out and in a certain measure viscous and gelatinized. The interstices are filled by the pressure, whereby a homogeneous, translucent sheet, like parchment, is produced. It is because the foaming water becomes clear again on standing, and the crystalline gelatine becomes translucent through heat, that is, through the closing of small pores.

Imitation parchment may be disintegrated again into its fibrous portions, like pergamyn, and consequently can be manufactured into paper again, and gelatinized.

A property much desired in modern parchment papers is the greaseproof quality. This is not to be attained by process 3, but by 1 and 2. The simplest method of testing is to hold a burning match at some distance under the paper; this causes bubbles which, according to their extent, permit of a judgment as to the degree of the greaseproof quality. Since parchment is disintegrated in water in processes 1 and 2, and is converted in raw stuff processes 1 and 2, it is sensitive to water, and consequently can only be used in certain circumstances as a substitute for acid parchment.—Papier-Markt, March 19, 1921.

The Canada Paper Company lost their case with regard to the use of sulphate of soda in their soda pulp mill. This injunction, against the use of materials which produce an unpleasant smell was granted in the Superior Court and the judgment confirmed in the Court of Appeals.

The Broke Hustler repeats: "Dead men tell no tales." Sure enough; also — they bring home no pay envelope.

British Trade News

(From OUR LONDON CORRESPONDENT.)

London, 15th April, 1912.

The strike of coal miners in the United Kingdom still continues. Fortunately for trade and industry the railroad and transport workers have not yet come out, as they threatened to do out of sympathy with the miners, but their threats are still overhanging mills and the Imperial Government is ready for any emergency. Coal is now rationed and paper mills are running short of supplies, thus causing many to close down.

The Newsprint Agitation.

Mr. Stanley Cousins' recent appeal to the Government to include paper in the Order for the Protection of Industries against dumping, and which was opposed by Lord Beaverbrook and Sir Edward Hulton, is still causing some excitement amongst the "Free Traders" and the "Protectionists". Both sides have freely expressed opinions and the newsprint consumers say they must have paper from Finland and Germany to keep the prices down. Mr. H. Reeve Angel, whose firm are the sole agents in the United Kingdom for the Finnish Papermill Association writes: ". . . We would like to make Finland's position clear in relation to Mr. Stanley Cousins' assertion (alleging dumping and depreciated currencies as the cause of the depression and unemployment that have afflicted the British paper trade). Grouping all newsprint contracts made by Finland with British and Irish publishers for delivery over 1921, the average price represents £37 6s. 8d. (8 cents per lb) per ton net. delivered. The highest price of my contract (with one minor exception—to the extent of less than 200 tons) is 4½d. (9 cents) per lb., net delivered. Sir Edward Hulton has stated that the British mills price today for newsprint is 4d. (8 cents) per lb. also that a similar grade of paper is to be had in New York at 4 cents per lb. Many of the paper mills in this country have made bad pulp contracts, due to the unprecedented demand for both chemical and wood pulp in the United States in the early part of last year, and it resolves itself into a question whether the losers are to be the paper mills or the consumers of paper, among which, of course, are the major number of the newspapers of this country."

Americans and Canadians can realize the amount of business done in the early part of 1920 in pulp. It certainly was not alarming. But it is true that big prices had to be paid for pulps and paper mills were buying from hand to mouth. However, it is now stated on authority that newsprint made in Finland can be shipped here and sold at 8 cents, while the domestic producer is selling under cost price at the same figure. Everything is in Finland's favor from raw materials to labor and it is Mr. Stanley Cousins' contention that the depreciated Finnish currencies enables mills in that country to quote prices delivered in England which are far below those of British mills. That is the crux of the whole question and it is against this unfair trading British millowners—at least the majority, as a great many are "Free Traders"—are seeking a temporary protection. Germany, for instance, some time ago could buy pulp in Finland at 150 Marks to the £1 and sell it in England at 235 Marks to the £1. Before the war the British £1 was equal to 20 Marks. British papermakers have to face hard facts; they cannot undersell the foreign imports without losing and their only remedy is some form of protection to save the mills and keep down the growing unemployment.

Pulp Imports.

During January to March last the total imports of all kinds of pulps reached 105,668 tons, as against 207,415 tons for the corresponding months in 1920. The imports for March alone reached 25,994 tons compared with 64,798 tons in March 1920. Canadians will see from these figures that "all is not well" in the United Kingdom. The following were the countries of supply in March:—

Bleached chemical—Finland, 0, (Jany-March 1 ton); Sweden, 0, (99 tons); Norway, 523 tons, (3,407 tons); Germany 0, (140 tons); Canada and other countries, 114 tons, (379 tons).

Unbleached Chemical—Finland, 582 tons, (Jany-March 1,610 tons); Sweden, 1,520 tons, (15,606 tons); Norway, 2,681 tons (9,122 tons); Germany, 0, (990 tons); Canada and other countries, 0, (732 tons).

Groundwood—Sweden, 50 tons (Jany-March 435 tons); Norway, 15,733 tons (63,670 tons); Canada, 4,500 tons, (7,520); other countries 0.

The customs value on Norway's shipment of 15,733 tons of groundwood is £159,282, while that of Canada's 4,500 tons is £54,000. This works out on the declared value at £12 a ton for Canada and £10 12s. 5d. for Norway. Groundwood today is £8 10s. a ton in London (c.i.f) f.o.b.

Imports and Exports of Paper.

The imports of papers from all sources in March were 470,118 cwts. as against 873,290 cwts in March 1920. For the first 3 months of 1921 they were 1,344,963 cwts. and for 1920, 2,735,222—a reduction of 50.8 per cent. The falling off was shown in packing and wrapping paper, printing and writing papers, mill, leather and cardboard. The supplying countries in March were:

Newsprint—Sweden, 58,676 cwts. 135,234 received between Jany and March); Norway, 23,517 cwts. (55,709 cwts.); Germany, 6,727 cwts. (25,203 cwts); Belgium, 10,004 cwts. (17,968 cwts); U.S.A. 552 cwts. (3,190 cwts.); Canada, 0, (4,920 cwts.); Newfoundland 0; other countries (including Finland) 94,250 cwts. (199,610 cwts.).

Packing and Wrapping Paper—Finland, 20,841 cwts. (37,954 cwts.); Sweden, 22,974 cwts. (77,332 cwts); Norway, 12,210 cwts. (43,751 cwts.); Germany, 14,199 cwts. (58,021 cwts.); Belgium, 6,882 cwts.; Canada, 67 cwts. (7,359 cwts); other countries, 44,179 cwts (34,025 cwts.).

Coated Papers—Germany 2,300 cwts. (Jany-March, 5,226 cwts.); Belgium, 1530 cwts. (4,024 cwts.); France, 164 cwts. (1,233 cwts); U.S.A., 851 cwts. (2,875 cwts.); other countries 638 cwts. (1,558 cwts.).

Turning to the exports of the British mills, the figures for all kinds of paper, cardboard, and bags, reached 109,551 cwts. for March last, compared with 163,773 cwts. in March 1920. The total for the 3 months of 1921 is 461,888 cwts., as against 437,453 cwts for the corresponding month in 1920. These figures for the three months of the year are not startling, but they show that the export trade is receiving considerable attention, though there was a decline in the March shipments. The countries to which paper was sent in March are as follows:—

Printing (mostly of a fine quality)—France, 290 cwts. (4,309 cwts during Jany to March); U.S.A., 584 cwts. (1,918 cwts.); other Foreign countries, 2,258 cwts. (43,488 cwts.); British South Africa 5,033 cwts. (31,145 cwts.); British India 6,773 cwts. (34,716 cwts.); Straits Settlements, 1,565 cwts. (4,734 cwts.); Ceylon, 2,496 cwts.)4,776 cwts); Australia 20,815 cwts.); New

Zealand 2,205 cwts. (19,441 cwts.); Canada, 419 cwts. (1,294 cwts.); other British possessions, 2,482 cwts. (12,926 cwts.). A total of 50,920 cwts in March valued at £220,770 and for the 3 months of 1921, 248,064 cwts. valued at £1,133,885 (as against 163,536 cwts. valued at £600,834 in 1920.)

Writing Paper—France, 12 cwts. (567 cwts. Jany-March); U.S.A., 88 cwts. (113 cwts.); other Foreign countries, 1,862 cwts. (8,980 cwts.); British South Africa 478 cwts. 3,370 cwts.); British India, 2,755 cwts. (8,190 cwts.); Straits Settlements, 199 cwts. (1,226 cwts); Ceylon, 223 cwts. (990 cwts.); Australia 2,226 cwts. (12,485 cwts.); New Zealand, 1078 cwts. (5,829 cwts.); Canada, 102 cwts. (10 cwts.); other British Possessions, 745 cwts. (3,102 cwts.). A total of 9,768 cwts. valued at £69,845 in March and for the 3 months in 1921, 45,036 cwts. valued at £313,676 (as against 43,851 cwts at £226,405 for the same period in 1920)..

Paper Makers' Association.

Owing to the strike, and threats of strikes, the Members of the Paper Makers' Association decided at the eleventh hour to put their annual dinner off until more congenial times.

This week, however, has been a busy one with conferences and meetings—some private and some open. Owing to the space at present at my disposal I will only deal with the Technical side of the Association. At the annual meeting of the Technical Section a report was read by Mr. A. W. Foster, B.A., (the Secretary) from the chairman, Mr. A. Baker, who has left nothing undone to arouse interest and develop the usefulness of the Section. The report stated that all the initial difficulties in establishing the Section had been overcome successfully and the constitution had been carefully drawn which would enable them to lay the foundation for the future upon a very broad base. "The membership," went on to report, **inter alia,** "includes 1 honorary member, 158 members, 41 associate members, 20 juniors, total 220. Three general conferences have been held—two in Manchester and one in London—and regular meetings of less formal nature in the Aberdeen, Manchester, and London areas. The subjects brought before the Section have been matters of live interest and the meetings have undoubtedly stimulated thought and inquiry in directions which cannot fail to react in a beneficial manner on the industry. As the President of the Association realized at our first meeting in Manchester we have tapped a new source, mainly of younger men, who will take a keen interest in the work connected with the trade. . . ."

Mr. A. W. Foster had also a reference to the Technical Section in his own report and he regretted that only 26 firms had become members of the Section. He appealed for assistance in a practical manner.

In the election of officers that followed, Mr. Baker was re-elected to the Chairmanship of the Section and Major J. Edington Aitken, whose paper was read with so much interest sometime ago in the "Pulp and Paper Magazine," was re-elected to the vice-chair.

It was agreed that there would be two general conferences of the whole section in the year, apart from small local meetings. Some of the important papers will be published. The next conference will be in Scotland about September probably.

Mr. T. D. Nuttall followed with a paper on "Recent Development in Papermaking" covering the changes of the past decade, and "Electricity in the Paper Mill on Heat Economy Lines" was the title of a paper submitted by Mr. A. B. Mallinson.

Reciprocity Advocated.

It is contended now that Scandinavian pulp mills should help the British papermakers out of a difficulty. The latter have 9 months pulp stock with little or no prospect of appreciably reducing it to make room for further commitments. Mills which committed themselves faced with the unhappy prospect of finding room for an increased supply of expensive stock when the demand for paper is even below normal.

NIPIGON FIBRE AND PAPER MILLS, LTD.

This illustration is a picture of the mill of the Nipigon Fibre and Paper Mills, Ltd. as it looked in January 1921.

We are now operating eight three-pocket grinders and expect to have twelve in operation by the end of Summer. The mill is operated throughout by electricity.

The grinders are operated in tandems of two by one thousand (1000) horse power motors for each set, giving plenty of power and steady running. All machinery throughout the mill is operated by individual direct connected motors.

General View of the Nipigon Fibre and Paper Co., Ltd.

The company controls over 1,500,000 acres of land, conceded to contain the finest growth of spruce in the Province of Ontario.

The plant is situated at Nipigon, Ont., on both the Canadian National Railway and the Canadian Pacific Railway, with siding into the mill yard.

The plant is situated on the famous Nipigon River, noted for the fine specimens of brook trout caught in its waters; some of the wonderful fish caught there last year weighed over seven pounds.

The company can load ocean going steamers right from the mill site, at its wharf on Lake Superior.

The officers of the Company are—James A. Little, President; M. D. McAlpin, Vice-President; Jacob Seibert, Secretary and Treasurer.

A VALUABLE BIBLIOGRAPHY.

From the library and the laboratory of A. D. Little, Inc. has come much information of interest and value to the paper industry. The latest contribution is a volume of 170 pages giving a bibliography of paper making materials which is reprinted from the Paper Trade Journal. This gives not only the names of books on pulp and paper manufacture but gives a bibliography of magazine articles on the subject of the various fibres that are employed by the industry. We find references as recent as November 1920.

Arthur D. Little, Inc. generously offer to send a copy to anyone connected with the industry who will address them at Cambridge, Mass.

NEWSPRINT PRODUCTION LESS, STOCKS LARGER.

The Federal Trade Commission reports that:

The average production of total newsprint and standard news based upon the total combined production for the years 1918, 1919 and 1920, amounted to 121,959 tons of total newsprint and 109,782 tons of standard news, for a period corresponding to March. The actual production for March 1921 amounted to 107,532 tons of total newsprint and 98,190 tons of standard news, which for total newsprint was 12 per cent below the average for the three-year period and for standard news 11 per cent below the average.

The production of newsprint for March, 1921, compared with March, 1920, shows a decrease, amounting to 16 per cent for total newsprint and about 18 per cent for standard news. The production for March, 1921, compared with March, 1919, shows a decrease of 6 per cent for total newsprint and a decrease of 6 per cent for standard news. The increase of production for March, 1921, over March, 1918, amounted to 2 per cent for total newsprint and 3 per cent for standard news. Mill stocks of both total newsprint and standard news increased during March, 1921.

Imports and Exports.

The imports and exports of printing paper not dutiable (practically all newsprint) and of woodpulp for the month of February, 1921, compared with the month of February, 1920, were as follows:

	Feb. 1921 Net tons	Feb. 1920 Net tons
Imports of Newsprint (total)	58,893	52,126
From Canada	48,894	50,581
From Germany	5,642	....
From Sweden	694	1,545
From Finland	417	....
From Norway	2,858	....
From other countries	388	....
Exports of Newsprint (total)	2,533	2,764
To Argentina	730	779
To Cuba	949	247
To Uruguay	320	67
To other countries	534	1,671
Imports of Ground Wood Pulp (total)	3,275	11,973
" Chemical " "	15,547	46,848
Unbleached Sulphite	6,620	28,904
Bleached Sulphite	3,140	3,969
Unbleached Sulphate	5,787	13,400
Bleached Sulphate	....	575
Exports of Domestic Wood Pulp ..	2,714	3,585

The imports of ground wood pulp for February, 1921, were 8,698 tons less than for February, 1920. The exports of domestic wood pulp were 871 tons less than for February, 1920.

Stocks of rolls in the hands of jobbers at the end of March were 419 tons less than the stocks in the hands of the same jobbers at the beginning of the month. Stocks of sheets were 815 tons less at the end of March than at the beginning of the month. The net decrease in the total stocks of newsprint in the hands of jobbers at the end of March amounted to 1,234 tons.

Commitments to sell roll news were 6,017 tons greater than commitments to buy. Commitments to sell sheet news were 739 tons less than commitments to buy. Total commitments to sell both rolls and sheets were 5,278 tons greater than commitments to buy.

Publishers' stocks increased 5,216 tons during the month. The average daily tonnage used during March was 141 tons more than the average used in February.

Publishers' stocks and transit tonnage on March 31st represented slightly more than 49 days' supply at the existing rate of consumption.

Eighty-four publishing concerns held about 85 per cent of the tonnage on hand at the end of the month.

The domestic consumption of standard news, by metropolitan dailies using between one-half and three-fourths of a million tons annually, for March, 1921, when compared with March, 1920, shows that the consumption for the month of March, 1921, increased about 4 per cent over March, 1920, and increased slightly less than 15 per cent for March, 1921, over March, 1919.

Average Prices Paid by Publishers.

The weighted average price of contract deliveries from domestic mills to publishers during March, 1921, f.o.b. mill in carload lots for standard news in rolls was $5.862 per 100 lbs. This weighted average is based upon March deliveries of about 45,000 tons on contracts involving a total tonnage of approximately 680,000 tons of undelivered paper manufactured in the United States.

The weighted average contract prices based on deliveries from Canadian mills of about 26,000 tons of standard roll news in carload lots, f.o.b. mill in March, 1921, was $6.48 per 100 pounds. This weighted average is based upon the March deliveries on contracts involving about 355,000 tons of undelivered Canadian paper.

The weighted average market price for March of standard roll news in carload lots f.o.b. mill based upon domestic purchases totalling about 2,600 tons was $5.623 per 100 pounds.

HOW PAPER BOXES ARE MADE.

The use of paper boxes of various kinds is an important factor in the progress of merchandising during the last score of years. During this period of growth, improvements and developments have come from local experimentation and until lately there has been little opportunity for cooperation among those making and using this useful article. There has lately come to the editor's desk, a little book 225 pages with 100 illustrations by Robert F. Salade, explaining how paper boxes are made. This is a very practical and instructive book which can be understood by the beginner and tells how to manufacture all kinds of paper boxes and includes special chapters on the printing department and the embossing, labelling, etc., which contribute so much to the effectiveness of paper boxes. We did not think there were so many kinds of boxes and carbons until we looked over the table of contents, nor did we realize the many operations nor the clever machinery by which these are now carried out with the minimum of labor as well as the minimum of waste. The book is published by the Shear's Publishing Company, at Lafayette, Ind.: This company also publishes a journal of information for the Paper Box Trade entitled "The Shears."

Technical Section

REVIEW OF RECENT LITERATURE.

A-1. The proximate analysis of hardwoods; studies on Oak (QUERCUS AGRIFOLIA.) W. H. DORE, Univ. of California Agric. Expt. Station. J. Ind. & Eng. Chem., **12**, 984-7, (Oct. 1920). Methods previously used for the analysis of coniferous woods were investigated as to their applicability to hard-woods. Oak wood, as a typical hardwood, was analyzed by suitable modifications of these methods. The material used was the wood of coast live oak (**Quercus Agrifolia**) in the form of fine saw dust. The purification treatment employed for the tissue of coniferous woods (successive extns. with benzene and alc.) was supplemented with digestion in cold water and cold 5% NaOH soln. These treatments remove all adventitious substances, but do not injure either the lignin or the cellulose. Lignin was detd. by the gaseous HCl method recently proposed by Konig and Becker. The modified procedure conforms to the requirements of a satisfactory analytical scheme in that it accts. for all the material of the wood, yields the max. amts. of the main constituents free from impurities or degradation products, avoids overlapping of constituents, and overlooks no constituent of importance. The compn. of oak wood as found by these methods is as follows (the figures are in every case avs. of 2 or more detns.):

Constituent.	Air-dry basis %	Oven-dry basis %
Loss on drying	4.20	....
Benzene extract	0.50	0.52
Alcohol extract	4.33	4.52
Soluble in cold water	3.66	3.82
Soluble in Cold 5% NaOH soln.	18.71	19.53
Cellulose	45.48	47.47
Lignin	20.25	21.14
Pentosans not otherwise accounted for	1.89	1.97
Mannan((residual)	Nil	Nil
Galactan (residual)	1.49	1.56
Total	100.51	100.53

The av. values for constituents of the purified tissue, and also the yield of purified tissue were:

Cellulose	45.85%
Lignin	20.25
Pentosans not otherwise accounted for	1.89
Galactan (residual)	1.49
Total	69.11
Residue after extraction (purified tissue)	68.60

Alkaline digestion is necessary for the best results with oak wood, and presumably with the hardwoods generally, in the prepn. of the purified tissue for cellulose and lignin detns. The coniferous woods should be prepd. without, and the hardwoods with, alkaline digestion.—A.P.-C.

A-3. Papyrus as a source of paper pulp. RAYMOND FOURNIER. Papier, **23**, 178-80, (Aug. 1920); 197-200, (Sept. 1920). A botanical, microscopic, and microchem. description of papyrus, together with a description of the method of prepg. papyrus pulp and of the microscopic characteristics of this pulp. Its many advantages over esparto as a source of paper pulp are described.—A.P.-C.

A-12. The jelly strength of gelatins and glues. S. E. SHEPPARD, S. S. SWEET, and J. W. SCOTT, Jr., Research Lab., Eastman Kodak Co., Rochester, N.Y. J. Ind. & Eng. Chem., **12**, 1007-11, (Oct. 1920). A torsion dynamometer is described for detg. the jelly strength of gelatins and glues under pure shear of molded cylindrical test pieces. Both the "breaking load" and the % twist at break are detd.; the product of breaking load x twist, divided by the cross section of the test piece, is taken as the jelly strength. No simple relation holds between the concn. of gelatin and the jelly strength; furthermore, the curves relating these values for diff. com. gelatins do not belong to a common family, and frequently cut each other. Hence, jelly-strength values detd. for a single arbitrary concn. give a very arbitrary comparison of the jelly strengths. There appears, consequently, to be no definite relation between the jelly strength, at a given concn., and the glue-joint or tensile strength of a dry glue joint. —A.P.-C.

A-14. Notes on the testing of filter paper. J. RIGAUD-MONIN, French School of Papermaking, Grenoble, France. Papeterie, **42**, 818-21, (Sept. 25, 1920). A brief mathematical discussion of the Herzberg tester for filter paper, showing that the test may be carried out at a temp. **t**° other than that prescribed by Herzberg (20°C). The results may then be calculated to a basis of 20°C by multiplying by the factor V_t/V_{20}, where V_t = coeff. of viscosity of water at t°, and V_{20} = coeff. of viscosity of water at 20°. R.-M. suggests applying this test to blotting papers also.—A.P.-C.

B-4. Treatment of wood to obtain glucose. Br. patent No. 43,212—1919, L. TERRISSE and M. LEVY, Geneva, July 21, 1920. Chem. Met. Eng., **23**, 797, (Oct. 20, 1920). One part of wood is first dried, treated with 1 to 2 parts of 35% HCl, and supersaturated with gaseous HCl until the acid concn. reaches 41%, the temp. being maintained between 0° and 25°C. It is then allowed to digest at a slightly higher temp., and finally the surplus acid is removed and the glucose purified by washing and filtration.—A. P.-C.

D-4. Wood grinder. Fr. Patent No. 506,065, VICTOR ANTOINE, Belgium, May 21, 1920. Papier **23**, 203-5, (Sept. 1920); Papeterie, **42**, 833-4, (Sept. 25, 1920). The grinder consists essentially of a saw-blade spirally wound around a drum which is given both rotary motion and a slight axial oscillatory motion.—A. P.-C.

L-7. Machine for the preparation of narrow strips of paper pulp for the manufacture of paper thread. Fr. patent No. 505,685, TURK GESELLSCHAFT m.b.H., Germany. Papeterie, **42**, 834-7, (Sept. 25, 1920).—A. P.-C.

E-2; K-10. Sizing Paper with Waste Sulphite Liquor. Ger. patent No. 307,087, Feldmuehle Papier and Zellstoffwerks A.-G., Berlin, Nov. 30, 1917. **J. Soc. Chem. Ind.**, xxxix, 15A (Jan. 15, 1920). Fibrous materials or finished products prepared from them are treated with solutions of the organic matter (lignin) from sulphite waste liquors rendered precipitable by treatment with alkalis, and the size is precipitated on the fiber by the addition of acids or suitable salts. The lignin size may be used in conjunction with other known paper-sizing agents. By heating with alkalis the sulphonic group is completely eliminated from ligninsulphonic acid and a dark brown alkaline solution of lignic acid is obtained, which gives a voluminous precipitate with acids or salts. About 10 to 20 per cent of NaOH, calculated on the dry substance of the sulphite waste liquor, is required. Alternatively, the alkaline liquor may be neutralized with acid, precipitated by alum or kieserite, and used for sizing in the proportion of 2 percent. —A. P.-C.

E-5. Controlling the cooking operation in the sulfite process. J. G. VARLOT, Papier, **23**, 169-73, (Aug. 1920); 193-7, (Sept. 1920). A discussion of the various factors which must be taken into consideration in the prepn. of cooking liquor and in the cooking operation (by the indirect method, together with a description of the methods used for analyzing the cooking liquor and the liquor at various stages in the cooking.—A.P.-C.

G-11. The Denoël pulp thickener: comparison with the Kenicott water purifier. JOS. DENOEL, Engineer of the Papeteries de Ruysscher, Lembrecq-lez-Hal, Belgium. Papeterie, **42**, 770-4, (Sept. 10, 1920). The main diff. between the 2 consists in that the summit angle of the inner cone is much greater in the Denoël app. than in the Kenicott app. This results in a very complete sepn. of the solids (up to 97.5%) merely by sedimentation in the former; while in the latter recourse must be had to a fiber filter to eliminate the solids which were not sepd. by settling. The influence of the summit angle of the inner cone, and of the direction of motion of the water during the purification are discussed at some length. (See also Theory and Practice of the Recovery of Papermaking Materials in the Waste Water of Papermills. Pulp & Paper, **18**, 729, K-2, July 8, 1920).A. P.-C.

K-3. Waterproofing paper. Br. patent No. 143,235, L. HEILBRONNER, Stuttgart, July 21, 1920. Chem. Met. Eng., **23**, 751, (Oct. 13, 1920). Paper is waterproofed and rendered impervious to air so that it may be used as a substitute for rubber or leather for making diaphragms for gas meters and gas lighters, or for the manuf. or purses, etc., by impregnation with a warm soln. of animal and vegetable glutinous substances, followed, after drying, by rubbing in fat, whale oil, etc. Long-fibered paper, such as japan paper, is preferably employed. A suitable impregnating soln. consists of gelatin 2 parts, agar-agar 1 part, $K_2Cr_2O_7$ 0.5 part, $CaCl_2$ or glycerine 3 parts, and $(NH_4)_2CO_3$ for reducing inflammability 3 parts, all dissolved in 100 parts of water. Gelatine alone may be used when brittleness is not objectionable, and the after treatment with fat or oil is necessary only when the material in use is alternately wetted and dried.—A. P.-C.

K-6. Obtaining paper pulp by retting. J. MICOL de PORTEMONT. Papier, **23**, 200-1, (Sept. 1920). P. suggests that paper pulp be prepd. from straws or grasses by means of the Rossi flax-retting process. It would be longer than the present chem. methods of treatment, but the simplicity and cheapness of the retting process would far more than counterbalance this slight disadvantage.—A.P.-C.

K-6. Process and Apparatus for Treating Paper Pulp. U. S. patent No. 1,322,489, G. C. HOWARD, Tacoma, Wash., U.S.A., Nov. 18, 1919. **J. Soc. Chem. Ind.**, xxxix, 15A (Jan. 15, 1920). A diluted mixture of pulp and water is caused to impinge upon the lower part of one side of a pair of rapidly rotating rolls disposed within a vat of semi-circular cross-section whereby the pulp is drawn between the rolls and a homogeneous mixture is discharged at the opposite side of the vat.—A. P.-C.

K-7. Apparatus for Making Paper. U. S. patent No. 1,318,900, J. T. MURPHY and E. J. RANEY, assignors to J. L. CAREY, Chicago, Ill., Oct. 14, 1919. **J. Soc. Chem. Ind.**, xxxix, 14A (Jan. 15, 1920). Two beating engines are provided at different levels, the lower one being operated intermittently and the higher one continuously. A stuff chest having a capacity greater than that of the intermittent beater is situated at the intermediate level, and means are provided for conveying stock from the intermittent beater to the stuff-chest and thence to the continuous beater.—A. P.-C.

K-10. Sizing paper with Montan wax. Ger patent No. (A) 305,678 (B) 310,076, P. KLEMM, Cautzach, Jan. 12 and May 8, 1917. **J. Soc. Chem. Ind.**, xxxix, 15A (Jan. 15, 1920). (A) A stable emulsion of montan wax, suitable for sizing paper, is obtained by heating it with a small quantity of resin soap or naphtanic acid soap in alkaline solution. (B) Liquid resin (**Tallol**) obtained from soda waste liquor (See **J. Soc. Chem. Ind.**, xxxv, 1163, 1916) is saponified and used as the emulsifying agent, somewhat less than 25 per cent of the quantity of montan wax being required.—A. P.-C.

K-10. Manufacture of Hard-sized paper.—Ger. patent No. 313,142, O. RUFF, Breslau, April 25, 1918. **J. Soc. Chem. Ind.**, xxxix, 15A (Jan. 15, 1920). Paper precipitated with the addition of vegetable mucilages or with substances capable of yielding mucilages, or paper made from pulp which has previously been treated with acids or acid salts (see **J. Soc. Chem. Ind.**, xxxviii, 284A, 625A, 896A, 1919; Ger. patent No. 309,-999, 311,772, and 312,179) is subjected to a heating treatment. Example: From 10 to 30 per cent of powdered peat calculated on the dry substance is added to the pulp in the hollander, and after the paper has been made it is heated at 120° Cent. for about two hours.—A. P.-C.

K-10. Sizing, Waterproofing, etc., of Paper. Ger. patent No. 305, 525, W. SCHMIDT and F. HEUSER, Darmstadt, July 12, 1917. **J. Soc. Chem. Ind.**, xxxix, 15A (Jan. 15, 1920). The paper pulp or the fabric is treated with tar from lignite or bituminous coal either in a fine state of division or in the form of a tar soap from which the tar is precipitated on the fibers by the addition of acid, formaldehyde or the like. The adhesion of the tar to the fibers can be increased by the addition of resin, casein, or animal size. The tar can be resinified by the action of formaldehyde, etc., and the coloration of the paper pulp can be modified by bleaching agents. A. P.-C.

K-12. Process for the manufacture of paper coated with color. Fr. patent No. 505,369, HERMAN BAREND HALLO, Holland. Papeterie, **42, 790**, (Sept. 10, 1920). The very finely divided coloring matter is applied by blowing it on the paper. — A. P.-C.

K-12. Driving mechanism for paper winders. Fr. patent No. 505,614, BJORN EILIF FOUGNER, Norway. Papeterie, **42**, 789-90, (Sept. 10, 1920). Winders on paper machines must be driven at a variable speed, as the circumferential speed of the roll of paper must remain const. This is obtained by means of a motor of such nature that its moment of torsion increases with

(Continued on page 486.)

PULP AND PAPER NEWS

The past week has been one of strikes and rumors of strikes. More than 8,000 members of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers have quit work in a strike against wage reduction.

Reports from Fort Frances, Ont., indicate that the plants of the Fort Frances Pulp and Paper Company and the Minnesota and Ontario Paper Company are closed down, the men having walked out Sunday morning. Approximately 1,000 men are affected by the strike, of whom about 75 per cent. are members of the Pulp and Sulphite Workers' Union. The strike is the result of an effort by the Fort Frances mills, in association with other paper manufacturing plants, to put into effect certain changes in wages and working conditions. The companies proposed a wage reduction of about thirty per cent.; a nine-hour day instead of eight hours; straight time payment for overtime worked; and proposed also that the schedule of wages should be subject to change by either party on ninety days' notice, and that union jurisdiction should apply only to men regularly employed at manual labor inside the walls of mill structures. The unions unanimously refused to comply with these conditions. The mill owners requested the men to work until May 11, the date on which the majority of agreements between paper companies and their employees expire. The men refused to work without an agreement. No talk of a compromise is heard, and it is not expected that any change in the situation will occur before May 11. The Canadian companies whose agreements will expire on May 11 are the Abitibi Paper Company, J. R. Booth, Ltd., the E. B. Eddy Paper Company, the St. Maurice Paper Company and the Spanish River Pulp and Paper Mills.

Jobbing printers, to the estimated number of 10,000, in fifty cities of the United States and Canada, have gone on strike with the aim of enforcing a demand for the forty-four hour work week in job and book printing offices. This demand has been granted the 15,000 printers employed in the book and job printing plants in New York City. In Chicago more than 4,000 job printers struck work. In the union shops there this was not over the forty-four hour week, which was conceded by agreement, but over the rate of pay where it was installed, the employers contending that the rate of pay should be the old hourly rate, and the union leaders that it should be the old weekly rate. The employers in Chicago who maintain open shops have announced their intention of standing by the forty-eight hour week. As far as Canada is concerned, nearly 300 employees of the job printing plants at Hamilton, Ont., quit work last Monday on the forty-four hour week question; as did between 60 and 70 job printers at Vancouver; and over 50 at Halifax, N.S., while at Peterboro, Ont., where the job printers struck for forty-four hour week and a minimum wage of $38 a week (which represents an increase of $8), the Peterboro Examiner, working under open shop conditions, appeared on Monday as a four page paper. At St. John's Newfoundland two evening newspapers, the "Star" and the "Advocate" were unable to publish on Monday because of a strike of printers demanding a forty-four hour week, but the "Daily News" was issued in the morning and the "Evening Telegram", which operates on the open shop plan, in the afternoon.

Mr. G. F. Steele, general manager of the Canadian Export Paper Company, Ltd., returned last Sunday on board the "Aquitania" from a business trip to Europe. Mr. H. Biermans, president of the same Company and general manager of the Belgo-Canadian Pulp and Paper Company, is shortly going to make a business visit in Belgium.

In the course of an interview on his return from Europe, Mr. Steele gave his views on the chaotic conditions which prevail in the paper industry on that continent.

"The financial condition," he said "of the Scandinavian countries, as well as Finland and Germany, is not very happy, and the producers of those countries are under heavy pressure from their banking connections to produce and sell paper even if such forced sales entail severe losses on the producers. Of course, such a state of affairs cannot and will not continue for a great length of time. The English paper mills particularly are facing a very unhappy outlook inasmuch as it is the custom of these mills to contract for supplies of raw material for a period of a year in advance. Owing to the inequalities of exchange, foreign offerings of paper are current in England at prices far below the cost of British manufacture, and many mills are facing disaster, if not ruin. This also applies to many English newspapers, whose supply of paper has been arranged during the past for periods running through this year, and in some cases well beyond this year. Here, again, we found the unfortunate effects of fluctuating and unstable markets, which are not desirable from the viewpoint of either the buyer or the seller." There is, of course, as Mr. Steele did not fail to note, a moral to be drawn by Canada from such an erratic condition in Europe. He said quite truly that the violent fluctuations in the price of paper in the past, are largely due to causes which are now producing such unfavorable and unfortunate conditions abroad.

About a fortnight ago, Mr. E. Beck, in charge of the publicity department of the Canadian Pulp and Paper Association, sent a most admirable letter, at once forceful and moderate to some 4,000 Canadian manufacturers. He pointed out that Canada imports every year some $10,000,000 worth of paper and paper commodities, most of which could be purchased just as advantageously at home, and he took an impregnable position in laying down the proposition that a Canadian manufacturer who wants Canadian consumers to give preference to his goods because they are Canadian-made should be prepared to give preference to those of other Canadian manufacturers, including the manufacturers of paper. He appealed to those to whom he was writing to assist in wiping out the anomaly involved in sending $10,000,000 out of the country every year, to buy paper which can be bought at home to as good or better advantage, and in behalf of the Association, he asked those who might know of any *real reason* for not giving a preference to Canadian made paper to communicate with the Association with a view to its being met. The replies so far received have been extremely gratifying, not merely in their number but in their general tenor. With unanimity those who have replied—and such replies have, in a surprising number of instances come from the chief executives of the manufacturing concerns there circularized — have admitted the force of the "Made-in-Canada" argument as applying to the paper they use in business. Some of them, of course, have used foreign-made paper by reason of an indifference which, now the matter has been brought to their attention, will probably cease to exist. Others have advanced reasons for the use of such paper, such as the alleged impossibility of obtaining the kind of paper they require in this country. In many such cases, the idea that the kind of paper required could not be obtained in Canada is erroneous and can be corrected with satisfactory results. When the idea is founded on fact, it will afford an opportunity to Canadian paper manufacturers to produce the kind of paper required. In any event, the appeal made by Mr. Beck should do great good.

Albert Gregg, Deputy Minister of Lands and Forests, at the resumption of the enquiry into affairs of the Spanish River Pulp and Paper Mills, Limited, in Toronto, last week, stated that a great deal of leniency was allowed to pulp companies by the department in the matter of dues. Large sums were often allowed to run in arrears, but interest at the rate of six per cent was charged. The witness admitted that the system led to serious losses to the public treasury. He stated that the Spanish River Company had escaped payment to the province of $37,500 per year, the total loss to the province having been about $150,000 as fire protection dues payable by the pulp companies had been reduced by the previous Minister to $6.40 per square mile. No written order was made, and not until January of this year was an order in Council validating this 50 per cent reduction made.

Premier Drury announced in the Ontario Legislature that a reorganization of the Department of Lands and Forests was in contemplation and would probably come within a month. The Liberal Leader in the House takes the stand that the services of the present deputy minister should be dispensed with.

S. J. Frame, secretary-treasurer of the Canadian Paper Box Manufacturers' Association, Toronto, has sent out notices advising the members that the organization will hold its annual meeting at the Royal Connaught Hotel in Hamilton, Ont., on Thursday and Friday, June 23rd and 24th. A large attendance of the members of the Association is looked for.

The capital stock of the Terminal Publishing Company, Limited, Fort William, has been increased from fifty thousand dollars to one hundred and fifty thousand dollars.

The Whyte Paper Company, Limited, a private company, operating on Bay Street, Toronto, has been granted incorporation by the Ontario Provincial Secretary's Department. The company is capitalized at $60,000 and is authorized to manufacture and deal in paper and all paper products.

H. W. Sherriff, of the Hodge-Sherriff Company, selling agents for the Wayagamack Pulp and Paper Company, has left Toronto on a business trip to the Pacific Coast.

Col. Thomas Gibson, of the Spanish River Pulp and Paper Mills, Limited, before the Riddell-Latchford Timber Commission, last week, made it clear that by reason of the company having erected a more extensive and costly plant at the Soo, than required in the agreement giving them certain pulp rights, the company is entitled to greater pulp areas than named in the agreement. This year the Soo mill will require 150,000 cords. Crown Counsel Dennison said that his purpose in questioning at such length the recent delimitation of the company's pulp area was to ascertain whether or not, when the boundaries were fixed, additional areas were granted to the company without competition. Col. Gibson stated that all undertakings of the company in respect of rights granted them have been fulfilled or exceeded, and therefore all areas received are legitimate. In regard to the opinion expressed by the chairman that the Government did not guarantee to supply unlimited quantities of pulpwood if larger mills were built, Col. Gibson replied that the Government had urged the building of larger mills.

Toronto members of the Canadian Paper Trade Association last week tendered a dinner to Fred Smith of Smith, Davidson & Wright, wholesale paper dealers, Vancouver, B.C., when an enjoyable couple of hours were spent.

In line with the slogan "Advance" the Canadian Paper Box Manufacturers Association, with head office at Toronto, applied for recognition by the Dominion Government in the form of incorporation. Letters patent have been issued effecting the incorporation and the notice will appear in the next issue of the Canada Gazette.

THERE IS A GRAIN TO PAPER.

As in streams or rivers, logs, sticks, etc., tend to point in the direction in which the current runs, so it is true of the small fibres, which make up the paper sheet. These, in spite of the side shake of the paper machine, have a strong tendency to follow the flow along the machine.

You can tell how the grain runs, and it is important in many phases of printing to know, by cutting two strips from the paper—one across and one with the sheet. Hold them together at one end, so that they will extend horizontally. The cross grain will have a much greater tendency to fall away. Try both on the under side, because if the strip with the grain running the long way is underneath, it will support the other.

This has a very practical application in bookmaking as books should always be made with the grain running up and down the page, not across; otherwise the book will not be flexible, nor will it close neatly, having a tendency to spring and stay open.

Another application of the knowledge, as to which way the grain is running, is of value in folding.

Cross grain folds are not as clean, owing to the breakage of the fibres. There is very slight breakage in folding with the grain.

The greatest tensile strength is always the long way, or with the grain.

If Russia and China ever reach the stage of general compulsory education, what demand there will be for paper and printing!

(Continued from page 483.)

a decrease in the rotary speed. Such a motor may consist of water, air, gas, or steam, turbine; and the inventor has found that a turbine working with a fluid under a const. press. gives the best results. The shaft of the turbine is geared to the shaft of the roll or drum and the rotation of the latter is quite regular, contrary to what usually happens when a friction drive is used. —A. P.-C.

K-12. Notes on the construction of papermachines. A. LAMBRETTE. Papeterie, **42**, 782-6, (Sept. 10, 1920). Machines should be built wide rather than long: the power consumption is proportional to the sq. of the length while it does not increase as fast as the width of the machine. Driers for wide machines are relatively lighter than for narrow machines. Output is proportional to the width of the machine, but it increases more slowly than the length: by increasing the length of the machine the time of starting up is increased, breaks are more frequent and take more time to fix, hitches in the running are more frequent and the work is consequently more trying on the machine crew, the work at the winder is particularly difficult. The loss of heat due to radiation is smaller on a wide machine. For high speed machines the driers should have roller—or ball-bearings. It would be advisable to use sheet steel driers with cast iron ends: these would be cheaper, lighter, and more efficient than cast iron cylinders, would reduce the danger of explosion, and would require a lighter frame to support them. The presses and calenders are frequently improperly designed, resulting either in the use of an excessive amt. of metal or in insufficient strength of certain parts. The design of the hood and the ventilating fan should be carefully studied: too much air uselessly cools down the driers, while too little air retards the drying and decreases the output of the machine. **Standardization of papermachines** and **specialization in papermaking** would in many cases result in very considerable savings.—A. P.-C.

K-18. Waterproofing Millboard. Apparatus for impregnating articles of pulp or strawboard. Br. patents No. 134,010 and 134,176. E. SLIGHT, and A. D. LACY, London, Oct. 21, 1918. **J. Soc. Chem. Ind.**, 14A (Jan. 15, 1920). The articles are first partially impregnated with a solution of casein to which formalhyde may be added if desired, in order to stiffen them and economize the consumption of the waterproofing composition, subsequently applied in the form of a mixture of wax and resin. In some cases the casein may be combined in the same bath with the wax and resin. The articles after immersion in the big bath are carried by a conveyor from one end to the other of a heated impregnating chamber, wherein the superfluous solution is collected and returned to the bath. The chamber is heater by means of a furnace, the products of combustion from which pass through a flue in the inclined hollow bottom of the impregnating chamber, throughout its entire length, and thence through the uptakes into the chamber itself. The gas-heated impregnating bath is situated at the lower end of the impregnating chamber and the products of combustion from this are likewise delivered into the chamber. The endless conveyor is preferably constructed of metal slats, the edges of which are turned over and joined together by wire links to form an endless band.—A. P.-C.

K-0. Process for removing mineral matter from paper. U. S. patent No. 1,318,902, Y. NAKAMURA, assignor to Nippon Sen-I Kogyo Kabushiki, Kaisha, Tokyo, Japan, Oct. 14, 1919. **J. Soc. Chem. Ind.**, xxxix, 15A, (Jan. 15, 1920). Paper is subjected to the action of a solvent consisting of aqua regia containing an excess quantity of HNO_3 and HF for the removal of mineral matter.—A. P.-C.

L-5. Noninflammable Cellulose Acetate Compound. U. S. patent No. 1,319,229, W. C. LINDSAY, Newark, N. J., assignor to the Celluloid Company, Oct. 21, 1919. **J. Soc. Chem. Ind.**, xxxix, 14A (Jan. 15, 1920). Acetylcellulose is mixed with phenyl salicylate and a solvent common to both.—A. P.-C.

L-5. Solutions of Cellulose. Br. patent No. 132,315 A. G. BLOXEM, London, Oct. 12, 1917. **J. Soc. Chem. Ind.**, xxxix, 14A (Jan. 15, 1920). In making solutions of cellulose by treating the material with a mixture of HCl and H_2SO_4 containing less than 39% HCl (Ger. patent No. 306,818, 1917. **J. Soc. Chem. Ind.**, xxxviii, 131A, 1919) a more rapid and complete solution is obtained by first treating the cellulose with an alkali. For instance, 1 part of cellulose is kneaded with 5 parts of 17% $NaOH$ solution for half an hour; water is then added, the alkaline liquor is separated, the cellulose is washed, scoured, washed again, and dried. The purified cellulose is then dissolved in a mixture containing 35% HCl and 10 to 12% H_2SO_4.—A. P.-C.

L-5. Industrial research in the fiber container industry. J. D. MALCOLMSON, Univ. of Pittsburgh. Chem. Age. (New York), **28**, 321-3, (Sept. 1920). A review of the work done by the Industrial Fellow of the Container club at the Mellon Institute of Industrial Research. This included devising a satisfactory method of testing corrugated board (the Webb tester; see Pulp & Paper, **18**, 900, A-14, Aug. 26, 1920), an accurate "crack-test" for oil-cloth, a strength test for collar-button holes, a means for detg. from what part of the hide a piece of leather originated, a suitable stain for differentiating the many varieties of fibers often encountered in the same sample of container board, and various tensile tests for box board; the study of the effects of age and atmospheric humidity; a method of detg. the behavior in use of fiber containers by means of a "drum" box-tester (see Pulp & Paper, **18**, 926, L-4, Sept. 2, 1920) which gave an opportunity of studying the effect on the life of the box due to grain direction, diff. types of cans, fit of contents, methods of sealing the flaps of the boxes, various reinforcing or wt. reducing arrangements, etc.; and a study of various accessories, such as gummed tape, waterproofing agents, and adhesives.—A.P.-C.

L-7. Wool Substitute from Cellulose. Ger. patent No. 312,304, GLANSFADEN, A. G., Petersford, July 15, 1919. **J. Soc. Chem. Ind.**, xxxix, 13-4A (Jan. 15, 1920).—Artificial filaments from plastic solutions while being freed from the solvents and precipitating bath chemicals which they contain, are kept under a tension which is induced by the kinetic energy of shower baths directed upon them. For example, spun threads in the form of hanks are carried through a series of chemical and washing shower baths in such a manner that the removal of all chemicals takes place in a single passage. The gentle tension thus obtained is sufficient to prevent the thread from giving an opaque and brittle product, and the yarn is strong, soft, bulky, and possesses a slight luster like wool.—A. P.-C.

ACCIDENT PREVENTION ACTIVITY AT WINDSOR MILLS AND EAST ANGUS, QUE.

For some time past the problem of Accident Prevention has received considerable attention by the Canada Paper Co., Ltd., Windsor Mills, and the Brompton Paper Mills, Ltd., East Angus. This interest culminated last month in Safety Rallies being held at both places on the 12th and 14th inst. respectively.

At Windsor Mills the campaign was opened by holding a meeting composed of the heads of every department in the mill to discuss the best method of improving the work of the accident prevention organization. Mr. F. J. Campbell, General Manager, conducted the meeting, and during the two hours session the whole question of accident prevention was discussed with animation and many pertinent suggestions advanced. Mr. A. P. Costigane, Secretary and Engineer, Ontario Pulp and Paper Makers' Safety Association, who was present by invitation, outlined in a general way what was being done in Ontario by the Association he represents.

The following day a matinee was given for the benefit of men working on night shifts and school children. Each school in the town sent a strong contingent and when the hour of opening arrived the hall was comfortably filled. Special Safety Films were shown amid great interest and close attention by the audience.

In the evening a mass meeting of employees was held and long before the time set for starting arrived, all available space inside the hall was taken up and many could not secure admission. The pictures were followed with close attention and during the interval Mr. Campbell made a speech outlining the purpose of the meeting. Mr. Campbell was followed by Mr. Costigane, who dwelt on three phases of Accident Prevention, (1) Why Safety should appeal to employers, (2) Why Safety should appeal to employees, (3) How can results be obtained? The interests of the audience was held from start to finish and the attention given the speakers showed the natural courtesy for which the Province of Quebec is rightly famous. To give all members of the audience a chance of following the address, a resume in the French language was given by Mr. Beique, General Superintendent, and was received by the audience with hearty applause.

The program at East Angus was practically the same as at Windsor Mills, with the exception that the hall could not be secured for matinee purposes. In the evening the hall was crowded to capacity, and the pictures were again a source of great interest. Mr. White, Chief Engineer for the Company, acted as Chairman and was followed by Mr. A. P. Costigane, who in turn was followed by Mr. Bourgauth who gave an abridged French translation of the address.

Taken all round the experiment was most successful and the interest created was well worth the trouble of organizing the meetings. There is a prospect that when the organizations in both mills are running in good shape, a friendly competition will take place between East Angus and Windsor Mills for the best accident record.

The Bedford Pulp and Paper Company has completed plans for the construction of a generating unit at its plant at Coleman's Falls, Virginia.

ENGLISH PAPER MAKER REPLIES TO CRITICS.

(Special from our London Correspondent.)

Mr. Stanley Cousins in his reply to Sir Edward Hulton and Lord Beaverbrook, whose statements appeared in the Pulp and Paper Magazine last week, says Sweden having a heavy import tariff on paper cannot commercially import from Norway, Finland, or Germany. It is not against Norway, Sweden, Canada, Newfoundland, or U.S.A. that relief is asked—they are sufferers as well from the deliberate policy of nations whose currency is varying, not from 18 to 17 and 24, but such as Germany from 20 to 260 and Finland from 25 to 160. Lest their forests fall under reparation claims, the German Government has deliberately cut and supplied pulp wood to pulp and paper mills of Germany sufficient to last them for 2 years at prices which are half the lowest figures for similar wood in Canada, Newfoundland, Sweden, of Norway. This wood is converted into paper and their requirements are sold to German consumers at a price below the cost of raw material elsewhere. The balance is sold, under license, for export and the additional price received for the exported quality is divided between the paper mills and the Government. This is not trading—it is politics and German finance—and its consequences will be disastrous to the United Kingdom and its workmen.

Finland's power to compete depends on her depreciated exchange. As long as this remains unbalanced, Finland—and not Canada, the U.S.A. or Great Britain—controls the ruling quotations, and other producers have to meet the Finnish price.

English paper mills have purchased raw materials for forward delivery in accordance with their usual practice. They are prepared to stand the loss involved by liquidating these stocks purchased at high prices if they could run their mills full time. Sir Edward Hulton and Lord Beaverbrook, adds Mr. Cousins, must be aware that many British and Irish publishers have bought foreign newsprint paper for forward delivery over 1921 at prices nearly double that at which British mills are selling today. These paper contracts were made during 1920 with mills in Norway, Sweden, and Finland. Newspaper publishers usually purchase ahead in order to ensure their supplies of paper and they are no more subject to criticism than the British paper mills are for purchasing their pulp supplies for forward delivery.

Given an even start British mills can produce and deliver their paper to the printing presses in Great Britain at a price as low as can be made by any other producing country, as has long been proven. Dumping of foreign surplus production and competition from countries with depreciated exchange debar British mills from a fair start. British industry is entitled to expect that this unfair competition be balanced either by a temporary import duty or by corrective exchange regulations. This is all the British paper industry asks.

Mr. Stanley Cousins says the entire trade is suffering—newsprint consumption being only one-third of the total paper used.

A forest fire which swept the outskirts of Lake Placid, N.Y., last Saturday called out more than 500 volunteer fire fighters. The blaze spread to a large area of valuable timber land and for a time threatened to destroy Lake Placid village.

UNITED STATES NOTES

The Harding Administration is seeking a solution of the country's print paper problem, through the development of Alaska's wood pulp resources. The matter came up for discussion at a Cabinet meeting in Washington last week. Among suggestions advanced was one proposing the establishment of a ship line between Seattle and Seward, a proposal which is expected to receive the consideration of the new Shipping Board. According to Col. Greeley, chief forester, who completed a survey of the territory recently, there is sufficient pulp wood in Alaska to furnish perpetually one third of the print paper consumption in the United States. This could be laid down on the Atlantic seaboard on a basis of between three and a half and four cents per pound, based on present rail freight rates, and practically one cent a pound by water.

Albert E. Ehlman, William F. Wolf and Julius E. Kiefer are named as incorporators of a new paper company recently organized in Winconsin to be known as the Valley Paper Mills. The capital stock of the concern is $1,500,000, consisting of 150,000 shares of $10 par value each. The incorporators are well known to the trade in Wisconsin and the Lakes region. Mr. Wolf formerly was an Appleton resident, and recently has been engaged as a stock and bond salesman. Several sites in Neenah are under consideration for the company's plant. It is understood that paper novelties are to be the chief product.

Members of the Connecticut Valley branch of the Technical Association of the Pulp and Paper Industry at a meeting held recently at Holyoke, Mass., heard an interesting address relating to the present status of the country's dye industry. The talk was by W. F. Van Riper, of the E. I. DuPont Company, Wilmington, Del. Mr. Van Riper said that American manufacturers are now producing more than 90 per cent of the known dyes. The remaining 10 per cent may be processed, said Mr. Van Riper, if Congress passes protective legislation so that capital for plants and machinery needed will be forthcoming. Research work in laboratories has led to a development making possible the manufacture of practically all known colors and grades of dyes. At the present time, according to Mr. Van Riper, the industry is handicapped by the lack of certain necessary chemicals which are not now produced in large enough quantities because of their non-profit bearing nature. With the making of these chemicals placed upon a profit-bearing basis, and the passing of protective legislation, Mr. Van Riper predicted that the American dye industry would get an impetus greater even than the advance of the last few years.

Means for the protection of the chemical and dye industry are even now under consideration in Congress. Senator P. C. Knox last week offered an amendment to the emergency tariff bill providing for six months' extension of war control of the industry. The suggestion was favorably reported by the Senate Finance Committee. Its effect will be to put an embargo on German and other foreign products. It is provided that the present War Trade Board in the State Department, which controls the dye situation by a licensing system, shall be transferred in to the Treasury Department, which shall administer it until more adequate protection can be given to the American dye industry by the permanent tariff bill.

A bill proposing a government operated paper mill has been introduced in the House of representatives by Congressman Baker of California. This measure is similar to one that was buried in committee at a regular session of the 66th Congress. It "authorizes and directs the public printer to provide a pulp and paper mill or mills for the manufacture of print paper for the government and for other purposes." The bill has been referred to the committee on printing. It is hardly likely that it will be reported to the floor of the House for action. It probably will be pigeon-holed in committee, like the last measure of the sort.

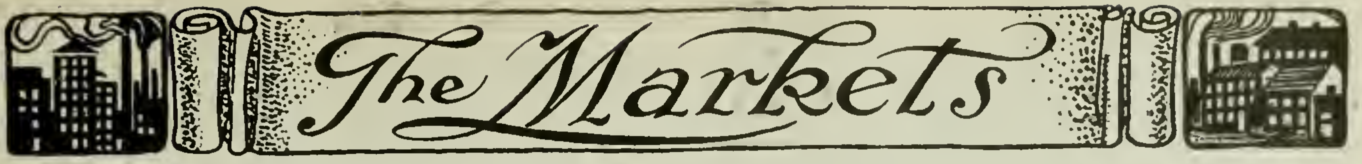
According to a report received at Washington, paper is so scarce in Russia that a special Soviet Government institution has been created in Moscow and other towns to deal with the shortage. Thousands of women have been employed by the Government, says the report, to search in old archives and record offices for clean sheets of paper, or paper used only on one side, which may be utilized for Soviet official correspondence.

E. Gordon Filer, the well known Michigan sulphate manufacturer, banker and industrial captain, died in Chicago recently, at the age of 81. Mr. Filer, who was president of the Filer Fibre Company, had large holdings in many big concerns, industrial and commercial, both in and out of Michigan. He was a pioneer in the development of the "White Pine" industry in Michigan. The Filer Fibre Company is recognized as one of the best sulphate mills in America, if not the largest.

Figures compiled by the Department of Forestry of the New York State College of Agriculture indicate the rapidly increasing interest in forestry on the part of farmers of New York State. A total of 529 persons attended lectures, demonstrations and round tables dealing with forestry problems this year compared with 341 last year at similar gatherings and 247 in 1919.

Interests of the International Paper Company who sought to prevail upon the management to establish the common stock on a dividend basis were disappointed at the annual meeting held at Corinth, N.Y., last week. Malcolm G. Chace, who with Henry A. Wise, led the minority interests, is revealed as probably the largest stockholder in the company. A total vote of 369,546 was cast, 245,624 for the "regular" ticket, backed by President P.T. Dodge, and 123,922 for the opposition. The directors were re-elected with the exception of A. M. Burbank, who was succeeded by Herman Elsas. Commenting on the possibility of dividends on the common stock, President Dodge said he wished to go on record as saying that the present management does not wish to ignore the claims of the common stock holders and was not opposed to a dividend on the junior issue, but until it was considered safe to divert money now necessary for improvements and extensions no dividends could be paid on the common.

Beware of desperate steps. The darkest day, lived till to-morrow, will have passed away.—Cowper.



CANADIAN TRADE CONDITIONS.

Toronto, April 30.—In these days of trade depression the pulp and paper industry is not escaping unscathed but there are branches of industry far worse off. There is no doubt that those engaged in the pulp and paper trade have been passing through a trying period, but in no other line of manufacture is there greater optimism for the future and greater faith in the ultimate emergence into a position closely akin to that which has existed during the fat years of the industry. Most of the companies are in a good position, notwithstanding the general trade depression and the difficulties met with in disposing of stock, and if business generally is dull, it is taken as part and parcel of the general scheme of things at the present time. Here and there in the pulp and paper trade there are evidences of brightening up in selling conditions, although there is an extremely dull market for raw paper stock. A considerable amount of pulp continues to pile up at a number of the mills and manufacturers are finding it difficult to dispose of it. Comparatively few transactions are taking place. On the other hand some of the jobbers report slightly better sales in some lines, notably kraft, and there are signs that somewhat freer buying of a number of lines of paper is taking place.

KRAFT.—There is a distinctly more buoyant tone to the kraft paper market, one mill reporting that the present month has been the best of the present year as far as sales go. Buying, which was very restricted during the past several months, is now resuming, and the fact that stocks are low is having something to do with forcing users of kraft paper into the market. Kraft has undergone a great development during the past few years and is now being very extensively used in various mercantile lines. The market, which has been very quiet of late, appears to be coming back nicely and the timidity in buying, which has characterized the trade for some weeks, appears to be lessening. During the past several weeks there has been a satisfactory improvement in the trade and dealers and manufacturers say that the present prices are likely to remain firm for some time to come, if not permanently. One manufacturer of kraft paper declared that with the present cost of labor, the chemicals in stock bought at high prices and other conditions, it would be impossible to effect any further reductions without going below the cost of manufacture. Kraft pulp is still quoted at $80 and kraft paper at 10c per pound.

BOOK AND BOND PAPERS.—Manufacturers and dealers in these lines report little change in the general situation which is one of extreme dullness with orders of small dimensions. Many of the mills are running light and there is little call for goods by the jobbers and distributors who have found the demand by the consuming public very light. There is some prospect of competition from the United States bond paper manufacturers, there being an era of price cutting across the line which appears to be having its effect on the Canadian market. Canadian jobbers, it is known in some cases, have been doing considerable cutting of prices with a view to getting rid of some of their surplus stock and turning it into money and it is on record, as showing the poor demand for paper, that one jobber marked down a cheap line of bond to almost a give-away price and could not dispose of it. He found that another firm had gotten in ahead of him with an offering of cut-rate paper and got what little business there was in that line. As showing the lessened volume of orders coming through it might be mentioned that the book paper mills now hold orders from the jobbers until they get a full carload and then ship. Carload lots to jobbers are somewhat rare.

WRAPPING PAPERS.—No one is buying wrapping paper beyond a few days requirements and Canadian mills and jobbers see little prospect of an immediate improvement in what is turning out to be a very quiet season in this line. Orders continue to be of small proportions and no one, either jobber or consumer, cares to take a chance on stocking up owing to the unsettled condition of trade. There have been no changes in the prices of wrapping papers during the week.

FLOUR SACKS DOWN.—The week saw a reduction of from fifteen to twenty per cent in the price of flour sacks. Some sample prices follow: 3½ lb. bags, rope, $6.50 per thousand, plain or $8.00 per thousand or less, printed one or two inks, while the price for white, blue lined is $7.50 and $9.00 per thousand. Fifty pound sacks, rope, are $46.00 and $47.50 and $50.00 and $51.50 for white, blue-lined. For printing extra colors not provided for in the list $1.50 per 1,000 or less than $1.00 for each additional color and a like additional charge for any printing on back of sack, will be charged. The trade discounts are 2 per cent on 5,000 and over: 3 per cent on 10,000 and over and 5 per cent on 25,000 and over.

WAXED PAPERS.—Manufacturers of waxed papers report a satisfactory improvement in trade, particularly in lines used by the confectioners, which is due to the advent of warmer weather. Prices of waxed papers have dropped from twenty five to thirty per cent since the paper slump set in and some of the firms are under the handicap of turning over high-priced stock which was bought when the paper industry was on the high tide. The general outlook for trade in this line is fairly bright.

GREASEPROOF AND CASINE.—Business in these lines is very dull although some trade is being done in a small way. The prices remain unchanged and the demand light.

LIGHT WEIGHT PAPERS.—Cautious buying still characterizes the tissue, toilet and light weight paper trade is somewhat unsettled owing to uncertainty as to what future prices are going to be. No dealer or consumer has any stock to speak of and the sales that are being made are of small proportions. A fair amount of business is being done in toilet and tissues but no one is placing large orders. Prices remain unchanged and it is thought in some quarters that they have reached a fairly stable basis.

RAG AND PAPER STOCK.—Cotton rags were in little demand last week and the market was entirely devoid of trading features. Few consuming mills came into the market as buyers, and offerings by dealers and brokers invariably met the response from manufacturers that they were not in want of rags for present requirements, and were not willing to anticipate future needs. There was very little change in values. Prices at best are nominal, and a few transactions were reported at about the same figure previously recorded. Waste paper of all grades continues very dull. All prices quoted are merely nominal, there being not enough business transacted to establish a firm market on any grades.

	Per Cwt. f.o.b. Toronto.
No. 1 shirt cuttings	$10.00—10.50
No. 1 unbleached cotton cuttings	6.00— 7.00
No. 1 fancy shirt cuttings	6.50— 7.00
No. 1 blue overall cuttings	6.00— 7.00
Bleached shoe clip	8.00 — 8.50
White cotton hosiery cuttings	10.00—10.50
Light colored hosiery cuttings	9.00—10.00
New Light fglannellette cuttings	8.00— 8.50
No. 2 white shirt cuttings	6.00— 6.50
City thirds and blues (repacked)	1.30— 1.40
Flocks and satinettes	.70— .80
Tailor rags	.60— .65
Gunny bagging	.80— .90
Manila rope	2.75— 3.00
No. 1 white envelope cuttings	2.75— 3.25
No. 1 soft white shavings	2.50— 2.75
White blanks	1.40— 1.50
Heavy ledger stock	1.75— 2.00
No. 1 magazine	1.50— 1..60
No. 1 book stock	1.00— 1.20
No. 1 manila cuttings	1.50— 1.60
No. 1 print manila	.70— .80
Folded news	.50— .60
Over issue, news	.75— .90
Kraft	140— 1.50
No. 1 clean and mixed papers	.30— .40

NEW YORK MARKETS.

New York, April 30—(Special Correspondence). —There have been few changes of importance noted in the paper market here this week but those that have occurred have been mostly of an encouraging character. Demand for at least some grades of paper seems on the rise. Consumers and merchants continue to buy only against immediate requirements in a large majority of cases, and yet, there are signs indicating that the market is on the mend and that it is gradually taking on a livelier complection. Moreover, a feeling of increased confidence in the stability of prices seems to exist, and there is no doubt that as quickly as general business conditions improve, thus leading to a greater consumption of paper, demand for paper of various kinds will immediately expand in like proportion as it is mostly conceded that stocks in the hands of consumers are considerably below what they usually are.

For the first time in quite a lengthy period an advance in paper prices in at least one certain instance has occurred. Manufacturers of tissue paper who have for some weeks been quoting 85 cents per ream on No. 1 white tissue, basis 20 x 30, and the same figure on No. 2 white and No. 1 manila, 24 x 36, have announced an advance of 10 cents per ream to 95 cents. Offerings in the trade by jobbers and secondhands are still made at the lower figure, but mills are reported holding firmly for the higher price, and seem determined to hold out for the price wanted, which they undoubtedly will obtain as soon as some of the cheaper priced tissue is removed from the market.

The threat of a strike of mill workers has tightened up the newsprint market. Prices are in about the same position but there has been considerable more demand from publishers, who in numerous cases have placed orders for quick deliveries so as to insure their requirements over a longer period. Leading producers of newsprint are not making commitments covering deliveries during the next few weeks, excepting, of course, subject to the strike. Present indications are that the strike will be declared, yet both consumers and manufacturers are taking a sane view of the situation and are quietly awaiting developments. It is generally recognized that present stocks of newsprint are ample to cover publishers' wants for quite a period and it is commonly felt that a strike cannot be maintained for any appreciable length of time under prevailing industrial conditions.

The spot market for newsprint is firmer in tone but quotations have failed to change. There are spot lots of roll news available at 5 cents and less per pound, and publishers have confined their buying chiefly to the limited-sized tonnage to be had at the low edge of prices. Contract quotations are maintained, but with few manufacturers quoting.

It is understood that board manufacturers are taking steps seeking to stabilize the market for their product. For some time past competition among board producers has been so keen that prices have been pushed down to a level where mills have been obliged to operate at a loss. Now, it is said, manufacturers are closing down their plants rather than continue making board to sell at less than the cost of production. Boxmakers are experiencing dullness in their trade and board manufacturers are commencing to realize that ridiculously low prices will not induce consumers to take any more board than they actually require. Most mills are quoting a minimum of $30 per ton f.o.b. their shipping point on plain chip board and $35 on filled news board, and while purchases can probably be effected at lower levels, it is stated that a majority of producers are insistent on these figures. As an instance of how low board values have sunk, it can be said that sales of chip have actually been recorded by Eastern mills within the past few weeks down to $22 per ton. Obviously, under prevailing circumstances, board cannot be made at this price at a profit for the manufacturer.

Fine paper rule quotably steady and there is a moderate business transpiring in the lower-priced lines. Printers and jobbers are buying cautiously but on the whole are absorbing fair amounts of bond and ledger papers. Wrappings are quoted at a basis of about 7 cents on No. 1 domestic kraft and are moving in a more or less steady way though in limited volume.

GROUNDWOOD—There is little activity in the mechanical wood pulp trade, and it is indeed a difficult matter to ascertain what market values are. Prices today depend in large measure on the individual transaction, on how anxious the seller is to move pulp or how keen the buyer is to acquire supplies. Some manufacturers, and it can be said most of the larger producers are holding rather firmly for the quotations named and seem satisfied not to effect sales unless securing the figures asked, whereas others are letting go of ground wood at surprisingly low prices. Offerings of prime spruce pulp have been made in the New

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York market at $25 and less per ton at grinding mills, with at least one concern offering No. 1 ground wood at $30 delivered to mills in the vicinity of New York. On the other hand, a more general quotation is between $30 and $35 a ton at producing plants. The market is very unsettled, with no definitely established price basis existing.

CHEMICAL PULP.—Demand for chemical wood pulp is slow and current business is very spasmodic and at the best involves but a small quantity of pulp. Papermakers are coming into view only when in actual need of a limited amount of this or that grade of pulp to augment contract deliveries, and in most cases evince no interest in offerings when not in direct want of supplies regardless of the prices quoted. Quotations are strictly nominal. It is a fact that consumers are enabled to buy from both domestic producers and from importers and substantially lower figures than sellers invariably name, indicating that at least some holders of stock are pressed to liquidate for whatever can be realized today. There have been reports of sales of foreign unbleached sulphite of No. 1 quality on the spot here at $75 per ton, while it is stated on good authority that one of the principal domestic manufacturers of bleached sulphite is offering such pulp at 5 cents a pound, or $100 per ton, at the pulp mill. News grade sulphite is freely offered at 3.50 cents per pound but it seldon fetching above 3 cents in actual sales.

RAGS — The light demand for papermaking rags from consuming quarters coupled with the flow of spring collections in from country sections, and a resultant accumulation of stock in dealers' establishments, makes for a very easy price tone. As a matter of fact, there is hardly an established market price on any grade of papermaking rags at present. Some dealers who are in a favorable financial position are holding firmly for the figures quoted while others are disposing of stock at whatever they are bid. Prices in general display a downward trend, with almost every sale of any importance recorded made at a lower level.

Roofing rags are available to felt mills at 75 cents per 100 pounds for No. 1 packing and 65 cents for No. 2 grade at shipping points. Old thirds and blues are offered at as low as 1.75 cents a pound for repacked and 1.15 cents for miscellaneous packing. Old whites are quotably off at around 6 cents for No. 1 repacked with No. 1 miscellaneous packing available at 4.75 cents, house soiled at 1.75 cents and street whites at 1.50 cents. New cuttings are irregularly priced with every probability favoring buyers securing wanted supplies at below the figures asked.

News From Our Advertisers

SLITTING AND REWINDING PROBLEMS SOLVED FOR THE PAPER INDUSTRY BY SPECIALIZATION. VIEWS OF MR. CAMERON OF CAMERON MACHINE COMPANY.

In commenting on the results achieved in the designing of standard and special types of Slitting and Rewinding Machines for service in the Paper Trade, Mr. Cameron chose as a summary the results during the last ten years.

It was not so long ago that the requirements in the Slitting and Rewinding line were of secondary importance to paper manufacturers, and rolls produced by the various types of Slitting and Rewinding Machines then available were satisfactory both to the mill and to the customer. The customer was not apt to be over critical as to the character of the rolls themselves as long as the quality of the paper was all right. The standards as to these requirements have constantly and rapidly advanced both in the matter of firmness and evenness of rewinding, accuracy of width and other features; including, also, a demand for rolls and coils in a range of sizes practically uncalled for ten years ago in any appreciable quantity. The average mill would supply rolls in a comparatively narrow range of sizes; but the more progressive mills these days are called upon to furnish rolls in any size from "midget" to "jumbo," both as to width and diameter. A sixty inch diameter roll of jute or chip-board seems to be in line with the modern demand for manufacturers of container board, corrugated paper products, etc.; while other mills or converters are confronted with a demand for midget rolls which might rival a lead pencil in diameter or a peppermint lozenge in width.

Owing to the introduction of a hundred and one processes of new invention in which roll paper is used: as, for instance, in Web Printing Machines, Bag Machines, Automatic Wrapping Machines, Adding Machines, Recording and Registering Machines, Paper Yarn Spinning Machines and a host of others, the manufacturers of Slitting and Rewinding apparatus have been put to it to keep abreast of the demand—and Cameron Machine Company have earned and deserve a reputation for various types of Slitters capable of meeting the rapid developments in the market requirements.

Aside from the enormous consumption of paper in roll form for supplying automatic machinery such as is mentioned above, there is a huge demand proceeding from the consumers of paper in roll form for such as store counter rolls, also for the purpose of ribbon

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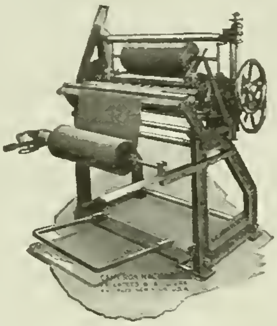
blocking, wire insulation, blasting, barber-headrest rolls, etc.—a list too numerous to mention specifically. Along with these demands has gone a constantly advancing standard on the part of the customer as to accurate, clean-cut work at a minimum of expense in converting the original webs into the size of rolls required.

In adding themselves up covering a period of the past ten years, Mr. Cameron pointed to the achievements of his concern by referring to one of their smaller models of Slitter and Rewinder for the production of midget rolls which they had built for Anthony Eisler & Company, New York City, a little more than ten years ago. The contrast between this little machine which seemed so puny when the illustration was laid beside a photograph of the Heavy Duty Rewinder, CAMACHINE-18, emphasized very forcefully the range of development wrought out by their Company leading up to the production of what they call their Type-18 Mill Rewinder.

Back of this development there is a history of consistent effort, day by day, month by month, and year by year, always directed toward Slitting and Rewinding Machine production. In passing from the stage of development where their shop was capable of producing only the small types of Rewinders up to the point where the line offered the trade covers the complete range of requirements, up to the heavy duty work accomplished by CAMACHINE-18 in direct connection with Paper-Making Machines, or converting requirements for heavy work in the Finishing Rooms, there were ten full years of steady plugging on the part of the designers, the shop crew and the cashier—not forgetting the cashier because the problems of ways and means for a business which has grown out of its own efforts from year to year, are enough to turn the cashier's head grey, unless it is already bald to start with.

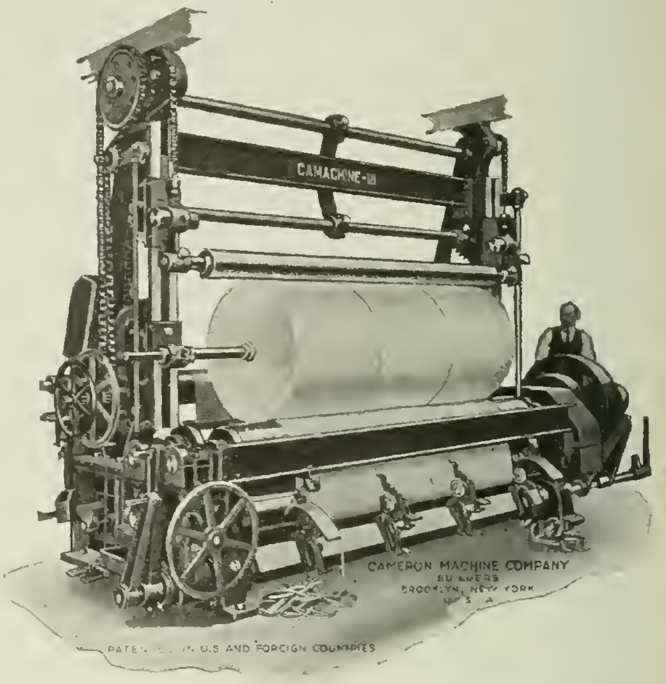


Prior to this ten years of history which are here commented on, there are ten preceding years which can be summed up in a few words; as those ten years were spent in "Learning How."

Following the "midget" machine built for Anthony Eisler, there was a series of machines growing out of same and culminating in the present-day, "CAMACHINE-18." Substantially the same basic theories wrought out in the first ten years of effort and incorporated in the smaller machines have been carried forward and amplified year by year until the goal of a fast running, heavy duty machine for dependable service in the Machine Room or Finishing Room of Paper Mills was reached—a long road to travel.

Any real success worth having is never cheaply bought; but it was an impressive statement that it had always been the policy of the Cameron Machine Company to submit their machines subject entirely to the approval of the user to accept or reject as its merits might warrant after an actual and practical trial of the machine in the hands of the customer for whom it was built. The claims made for the machine could always be justified and checked up by the user on the assumption that he had a right to know what his money was spent for: and if the service of the machine did not justify the expense, there was nothing more to say.

Realizing many years ago that the field for various types of Slitting and Rewinding Machines was a very important one requiring special study, Mr. Cameron stated that his associates and himself came to the conclusion that more would be gained in the long run, both in dollars and in good-will, by devoting their energies solely to this line. The results have justified this policy both technically and in volume of business.



It occurrs to us that perhaps this is a proper time to consider three important things: first, the replacement of old and inadequate equipment for roll production; second, the extension of present facilities to cover a wider range of work; third, the application of labor-saving and cost-reducing methods to meet strenuous competition by increasing both the quality and quantity of product.

BULLETINS RECEIVED.

Among the most attractive and complete catalogs that we have received recently should be mentioned those just sent by the Canadian Ingersoll-Rand Company, 260 St. James Street, Montreal. One set shows the well known Cameron pumps and includes centrifugal, direct acting and multi-stage pumps. The illustrations are exceptionally good, not only of the diagrams showing the principles, but also those showing the assembled pumps and their typical installations. Perhaps of more particular interest to readers of the Pulp and Paper Magazine is the series which includes the Ryther Slasher system, the Paulson Barking Drum and Bark Press, the Ryther Chip Screens and the Bird Pulp Screens and Save-all. Copies of these bulletins will be sent to executives desiring them on application to the company.

Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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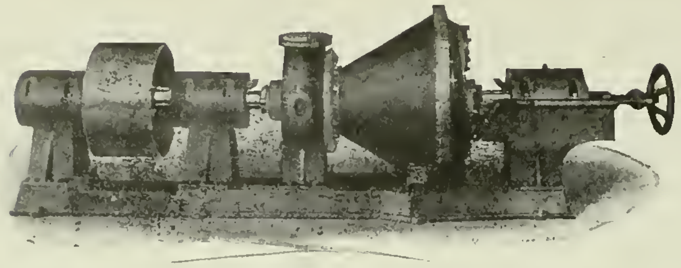

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EDITORIAL

THE RIORDON STATEMENT.

The Pulp and Paper Magazine seldom comments on financial matters. In the present instance the case is one that affects several groups of people. The situation has not been entirely clear, but the long-expected Riordon statement has at length been issued and the announcement of the actual state of affairs is gratifyingly frank and clear. It assumes the form of a report to the shareholders over the signatures of Mr. F. P. Jones, Senator W. C. Edwards and Messrs. F. E. Bronson, George M. McKee, and F. N. Southam. These gentlemen it appears, were recently appointed a committee of Directors to examine into the affairs of the Company and report on its financial position and requirements and to make recommendations.

Ths committee reports that the financial position of the Company is serious and that unless further working capital can be secured immediately it will not be able to continue business. As a result of the committee's investigation of the affairs of the Company, it has come to the conclusion that its present position is due to commitments for construction and other expenditures having been undertaken before adequate financial arrangements were made. Further, mention is made of the world-wide reaction in trade conditions generally, and of the falling off in shipments and receipts during the last five months. At the same time, the committee is of opinion that the position of the Company is fundamentally sound provided additional working capital can be obtained, and it makes an urgent appeal to the shareholders to furnish part of the additional working capital required to enable the company to meet its liabilities and continue a business which, with adequate working capital, should continue profitable.

As regards the manner in which the committee proposes that the additional capital should be raised, the method decided on is that the Company shall forthwith authorize an issue of $5,000,000 Ten-Year 8% Mortgage and Collateral Trust Bonds, to be dated June 1st, 1921, and to be secured by a specific mortgage and charge on the fixed properties, plants, and timber lands of the company (subject to the bond issues and mortgages mentioned in the balance sheet), and by a first pledge and charge by deposit with the Trustee for the bondholders of $6,000,000 of 8% Ten-Year Refunding Mortgage Bonds to be created by the Gatineau Company, Limited, and issued to the Riordon Company in payment and satisfaction of advances heretofore made by it to the Gatineau Company, Limited. The Riordon Ten-Year 8% Mortgage and Collateral Trust Bonds will be further secured by a floating charge (subject as aforesaid) on all the other properties and assets of that Company. They will rank ahead of $47,000,000 par value of Preferred and Common Shares of the Company.

The bonds of the Gatineau Company are to be pledged and deposited with the Trustee as security for the 8% Mortgage and Collateral Trust Bonds to be issued by the Riordon Company will be secured by specific mortgage and charge on the properties of the Gatineau Company, consisting of all the real estate and sawmills of that Company at Ottawa, Hull and Rockland, freed old water power rights on Gatineau, Nation and Lievre Rivers, and by assignment of over 8000 square miles of pine and pulpwood limits purchased by that Company through its acquisition of the businesses of W. C. Edwards & Company, Limited, and the Gilmour & Hughson Company, and a floating charge on all the other properties and assets of the Company, subject to purchase money mortgages for $5,000,000 which mature 1925 and $478,553 now due and bank liens. The Trust Deed securing the bonds will provide for the refunding of these mortgages at par.

It has also been arranged that a Voting Trust be created, by which voting control of the shares of the Company will be placed for a period of five years in the hands of five Voting Trustees to be nominated by the Bankers interested in the Company and its securities. The Voting Trust agreement will be completed to the satisfaction of the signatory committee before allotment.

On account of the urgency of the situation and as an inducement to the First Preferred Shareholders to subscribe for the Bonds above mentioned, all the holders of the 7% Cumulative Convertible (Second) Preferred Shares of the Company have agreed to surrender pro rata to the subscribers to the Bonds a sufficient proportion of their holdings to provide a bonus of $750 par value of the said 7% Cumulative Convertible (Second) Preferred Shares for each $1000 of the Bonds so subscribed and paid for, and the shares necessary for this purpose have been deposited with the Montreal Trust Company.

Whether the shareholders will make an adequate response to this appeal or not remains to be seen. For ourselves, we take the view that, in their own interests, they would be well advised to bear their part in providing the additional capital required. It was not by any means without reason that last month, when the position of the Company first became the subject of general discussion on the street, we published a special article on its strength. In the article in question we emphasized the value of the physical assets belonging to the Company. This aspect of the case must be fully borne in mind by any one who would fairly judge of the company's position and the probability or otherwise of its surmounting its present difficulties. In proportion to its assets, the bonded indebtedness of the Riordon Company is very far from excessive and this fact should render it less difficult, than might otherwise be the case, to arrange a new issue of bonds. The earning power of the Company has been proved for many years past to be very large indeed. The product is required for the manufacture of high grade papers, the temporary slump in the consumption of which is largely responsible for the present decrease in income. The very name of Riordon has long been recognized as being synonymous with the most excellent quality of product. As we pointed out in the article to which we have just referred, the Company's properties, mills and timber lands, and those of its subsidiaries, are believed to be the largest and most valuable of their kind in Canada under one control. The Board of Directors — very wisely in the circumstances — pledges itself to a policy of rigid economy in operations and to discontinuance of construction as far as possible.

The Company's barque is passing through troubled waters. But it is our opinion—and we offer it only for what it is worth—that there are clear seas ahead. No doubt, one of the causes of the present trouble is the fact that the construction expenditure on the Kipawa plant exceeded the original estimate of cost. But we believe that informed opinion is to the effect that, when the Kipawa mill is working to the full, it should be able to carry all the charges incident to the Company's financing—both that financing which has already taken place and also that which it is now being attempted to carry through. We see no reason to doubt the accuracy of the committee's estimate of the position of the Company as fundamentally sound provided additional working capital can be furnished forthwith. And for the sake of a concern which has long borne an honored name in the Pulp and Paper industry, for the sake of the shareholders themselves, and for the sake of the industry as a whole, we heartily wish the Committee of Directors success in the appeal which they are making to the company's shareholders to subscribe for the present issue to the limit of their ability. This Company is but a unit of the Pulp and Paper division of Canada's industrial forces. This division is largely bearing the burden of maintaining Canada's economic position and every unit in it must be kept as an effective force for the commercial struggle in which the Dominion will play an ever increasing part.—A. R. R. J.

The Brompton News prints the cheerful news that the sulphate mill at East Angus is a very busy place. Congratulations!

BREAKING RECORDS IN DULL TIMES.

While many paper manufacturers have been lamenting the dullness of business and many mills have been running only part time, the biggest individual paper mill in Canada has been making records in production. The Abitibi mills on their four machines on April 20th produced 270.39 tons of newsprint at an average operating efficiency of 98.1 per cent. This record did not suit the ambitious crew so on April 21st they made 271.11 tons and on April 28th 273.54 tons, which represents an operating efficiency of 98.9 per cent. Perhaps the most remarkable feature of this day's work was the running of one machine for twenty-four hours without a single break. We have information that the Donnacona Paper Company has made a similar record for running without breaks but we have not had our attention called to such a record as this for maintained production. According to the Broke Hustler, which keeps the people of Iroquois Falls in touch with what is going on in that interesting town, the production in pounds per inch of trim for April was maintained at 793 pounds. This gives a figure which forms a basis comparison with the production of any other paper machines. It is gratifying to note that beginning with 1915 the averages for the past six years consistently grew by the following steps; 533, 613, 637, 662, 679, 711 pounds per inch of trim until now April has set a basis which if maintained for the year will give the Canadian Pulp and Paper Industry a performance to point to with pride.

A reader of the Pulp and Paper Magazine wants to know how to line up a cylinder machine. The best answer will be printed and paid for. How do you do it?

COBWEBS.

Canadians will read with interest the account of the annual meeting of the British Papermakers Association. Their problems are, for the most part, quite different from ours, but there is much in common and many points of contact. The growth of the British Technical Section is phenomenal. In this connection, we are led to wonder how they bleached out all semblance of Empire preference and "establish relations with the corresponding American association" without so much as approaching their Canadian cousins.

The Spanish River News would be quite a paper if it published only announcements of births and marriages.

Some people, like some horses, only require to be put up against a hard proposition to concentrate their energy and pull out successfully.

It looks as if a lot of papermakers would have a long vacation. Perhaps they don't realize that some manufacturers' profits and chance of profits have already disappeared. Others may have long contracts.

Control of Alum Content of the Tubsizing Bath

By P. W. CODWISE.
Byron Weston Co., Dalton, Mass.

The manufacture of certain high grade papers has, from earliest times, involved an immersion of the dried sheet in a bath of sizing material. Since this sizing agent was contained in a tub, into which the paper was dipped, the process became known as tub sizing. The term is now generally applied to all papers which have been treated to a second sizing, and includes the majority of the so-called fine papers.

In view of the many years for which this process has been used, the literature upon the same is very scant; this being especially true in regard to that of a scientific nature. The tub sizing bath is usually a solution of animal size, that is, of gelatine, in water, and of sufficient strength to impart characteristic qualities to the sheet treated with it. At the present time, various starch products are used to some extent in this connection, but gelatine still continues to hold first place.

In the making up of the size bath, it is customary to incorporate a certain amount of alum, that is aluminum sulphate, with the gelatine solution. This is done for a variety of reasons, among which may be mentioned the prevention of the solution from souring, and according to Cross & Bevan (1), the rendering of the gelatine resistant to ink. The amount used may vary within large limits, as from a mere trace, to 10 per cent of the solid matter, and possibly higher. It is now necessary to point out that the incorporation of even slight amounts of alum with this bath has a decided effect upon its physical properties, and that the actual amount present as such should be known in order that effcient technical control may be established. This article describes a rapid volumetric method of estimating the excess of alum present in such a solution of gelatine.

When developing such a test, we find that certain factors limit us greatly in the selection of chemical indicators. The first of these is the disturbing action of gelatine itself upon the majority of them. In fact, the only important indicator which, up to very recent times, has been considered of value for glue testing, is litmus, used in the form of blue litmus paper. At present, an indicator is available which is superior to litmus in many ways, while having its color change at nearly the same point of hydrogen ion concentration, that is, close to the neutral point, or hydrogen ion concentration of 10^{-7}. This is the substance commercially known as Brom Thymol Blue and the chemical name of which is dibromothymolsulfophthalein. It is one of the brilliant indicators recently synthesized by Clark and Lubs (2)

The other factor involved is the action of aluminum sulphate toward these indicators. That litmus is useful in estimating alum is shown by the fact that Baeyer's original volumetric method made use of this indicator for determining the total acidity of the alum (3). However, it was later shown that indicators of a different range were more suitable in this connection. We find, therefore, that it is necessary to use a correction factor to take care of the error inherent to an indicator having such a working range, when used with aluminum sulphate. By using such a factor, brom thymol blue can be employed to good advantage for estimating the total acidity of the alum present, which we are seeking.

Brom thymol blue (4) is a yellow substance which is turned to a brilliant blue by active alkalies. It has, however, intermediate color changes, as it tends to pass from the yellow to the yellow green, then to the blue green and finally to a blue. It is the change from the yellow green to the blue green with which we are to be concerned in the present case. This substance is superior to litmus, due to the fact that it possesses greater sensitiveness, and can be obtained in a high degree of purity. It can, therefore, be relied upon with regard to uniformity of sensitiveness, a fact which is far from being true in regard to litmus. Furthermore, the correction factor above mentioned can not be accurately determined with litmus due to lack of sensitiveness. Lastly, litmus tends to give results that are decidedly below the correct ones. It is found most convenient to use the indicators in the form of test papers, due to the colored and colloidal nature of the solution. The brom thymol blue paper may be prepared by dissolving one-tenth gram of the substance in 50 c.c. of alcohol, saturating filter paper with this solution and quickly drying. Due to its sensitiveness, this paper is easily affected by strong laboratory fumes, especially ammonia, and on this account should always be kept in a stoppered bottle when not in use.

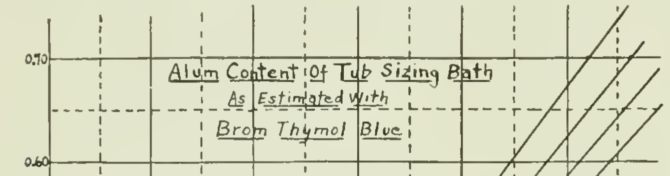
The directions for conducting this test as follows:—A sample of the size is measured out into a small beaker and heated to 130 deg. F. on a water bath. It is tested by immersing a small strip of the yellow brom thymol blue paper in it and withdrawing the same. In case the color of the paper is unaffected, the titration with standard tenth normal sodium hydroxide is commenced. The titration is continued with vigorous stirring of the solution until a fresh strip of the paper is turned to a distinct green; it is finished by continuing until a blue green reaction is obtained. The end point is considerably beyond that at which a green becomes noticeable, and on this account some difficulty, with a tendency toward low results, may be experienced at first. The color at the end point is similar to the color of a solution made by mixing two parts of 10 per cent solutions of copper sulphate and sulphuric acid with one part of a 10 per cent solution of ferric chloride. This color also corresponds to that used for obtaining the correction factor described below. The color changes produced in brom thymol blue paper during the course of this test will alter on standing and partially drying; therefore, it is necessary to make the decision immediately upon withdrawing the paper from the solution. It is essential that a new test strip be used whenever a trial is desired, due to the highly colloidal nature of the solution.

It is possible to use blue litmus paper for this test, although there are several disadvantages in its use as has already been pointed out. If such is preferred, however, the procedure is similar excepting that solutions containing free alum redden the paper and the titration must be carried out until a fresh strip of the paper is no longer affected. The ordinary red litmus paper is useless for this work, because of its lack of sensitiveness. When using the blue paper, the tendency is for the results to be lower than those obtained below; such is especially true at the higher concentrations of alum. If the litmus paper is not of a high degree of sensitiveness, and this is true of many of the commercial grades of paper, the results will be even lower than otherwise. When using this paper, the rapidity with which the paper reddens and the intensity of the color may be used as a gauge of the approach of the end point.

It has been previously pointed out that a correction factor must be applied for the error inherent to an indicator of the range of those under consideration, when used with aluminum sulphate. This has been arrived at as follows. The author has already published a method for estimating aluminum sulphate volumetrically using phenolphthalein (5). A .5000 gm. sample of the alum employed in the present work was found to consume 47.14 c.c. $\frac{N}{10}$ NaOH by the standard procedure. The same sample consumed 42.86 c.c. $\frac{N}{10}$ NaOH under the conditions of this test with brom thymol blue. From these figures, we calculate that the reading of our test must be multiplied by 1.100 in order to obtain correct results.

In calculating the result, it is first necessary to correct the reading by adding or substracting the quantity of N/10 NaOH equivalent to the original alkalinity or acidity of the gelatine that is employed. After this the result is multiplied by the correction factor just described. We can then convert the figure to aluminum oxide; 1 c.c. $\frac{N}{10}$ NaOH = .001703 gm. Al_2O_3. This result is calculated to aluminum sulphate according to the strength of the alum used.

The accompanying chart has been prepared giving the grams of alum of 14 per cent., 15 per cent., 16 per cent and 17 per cent Al_2O_3 content represented by any reading as obtained. This eliminates all calculations except when it is necessary to correct for the original alkalinity or acidity of the stock.



In order to determine the applicability of this test and to ascertain the degree of accuracy to be expected from it, the following experimental work was carried out. Two samples of distinctly different kinds of commercial gelatine were used, one being originally slightly acid and the other neutral. The solutions were made up by dissolving 50 grams of the gelatine in distilled water and making up to a total weight of 500 grams of solution; in other words, the tests were conducted upon 10 per cent solutions of gelatine. Known quantities of alum, previously dissolved in a minimum of water were added and the resulting mixture analyzed for alum content by the above method. The conditions were so regulated that each sample withdrawn for analysis contained 5 gms. gelatine and the proper amount of alum. The alum used in these experiments analyzed 16.05 per cent Al_2O_3 and showed no free acid as tested with congo red indicator.

SAMPLE A.

Actual Percent of Alum added upon Weight of Gelatine: 2.00; 4.00; 6.00; 8.00; 10.00.

Net c.c. of $\frac{N}{10}$ NaOH consumed by standard sample: 8.93; 19.15; 26.15; 36.05; 45.20.

c.c. of $\frac{N}{10}$ NaOH after correcting for indicator error: 9.83; 21.07; 28.75; 39.70; 49.70.

Percent of Al_2O_3 found by analysis, upon wt. of gelatine: .3350; .7190; .9800; 1.353; 1.693.

Percent of Alum found by analysis, upon wt. of gelatine: 2.08; 4.48; 6.10; 8.44; 10.55.

The above sample was originally slightly acid and a sample representing 5 gms. of the gelatine consumed 2.73 c.c. of $\frac{N}{10}$ NaOH. The figures above are net results after correcting for this factor.

SAMPLE B.

Actual Percent of Alum added upon Weight of Gelatine: 2.00; 4.00; 6.00; 8.00; 10.00.

Net c.c. of $\frac{N}{10}$ NaOH consumed by standard sample: 8.81; 19.12; 27.58; 36.80; 45.05.

c.c. of $\frac{N}{10}$ NaOH after correcting for indicator error: 9.70; 21.02; 30.32; 40.50; 49.55.

Percent of Al_2O_3 found by analysis upon wt. of gelatine: .3305; .7170; 1.031; 1.380; 1.689.

Percent of Alum found by analysis upon wt. of gelatine: 2.06; 4.47; 6.44; 8.60; 10.51.

The above sample was originally neutral and therefore no correction was necessary.

It would hardly be wise to conclude this paper without some general remarks upon the theoretical aspects of the test. We find the statement made by Prideaux (6) that colloids tend to alter the equilibrium point of indicators and that glue or gelatine falsifies the results on the average by 0.1 in log (H). That gelatine possesses an iso-electric point, upon one side of which it behaves as an acid, and on the other side of which it behaves as a base, has been pointed out by various investigators (7). It is easily seen from this last statement that only indicators having their color change within a certain narrow range of hydrogen ion concentration would be suitable in the presence of gelatine. When in connection with this, it is realized that aluminum hydroxide is an amphoteric substance, also possessing both acidic and basic properties, it is seen that the working out of this test offered practical difficulties of a serious nature. Lubs (2) also recommends another indicator, brom cresol purple, to replace litmus; this is shown to have a working range somewhat different than brom thymol blue and proves to be unsuited for our purpose as it turns color much before the true end point is reached. Prideaux (8) states that although it cannot be definitely proved that a test paper will give the same results as the indicator in solution, yet it has been clearly demonstrated that the sensitivity of the papers is sufficient for most purposes. He goes further to say that theoretically the most satisfactory indicators to use in this form would be those with their working range near the neutral line of hydrogen ion concentration, which is the case in this instance.

Summary:—

(1) A method, suitable for mill control, of estimating the excess alum present in tub sizing mixtures has been detailed.

(2) The application of one of the recently synthesized indicators, namely, brom thymol blue, to this work has been investigated. It has been found that the same is eminently suited for the purpose.

(3) It has been pointed out that blue litmus paper may be used for this work, but that the errors involved will be much greater than with brom thymol blue.

(4) The bearing of this test upon the physical properties of the tub sizing solution and of the paper has been noted.

(5) A graphical chart which eliminates the larger part of the calculations has been included.

References:

(1) "A Text Book of Paper Making". C. F. Cross & E. J. Bevan 4th ed. P. 296 (1916).

(2) J. Ind. and Eng. Chem. Vol. 12, No. 3, P. 273, (1920).

(3) F. Sutton "Handbook of Volumetric Analysis", Ed. 9, p. 147 (1904).

(4) May be obtained from Hynson, Wescott & Dunning, Baltimore, Maryland.

(5) Paper, Vol. 26, No. 5, p. 13, (April 7, 1920).

(6) Prideaux, "The Theory and Use of Indicators", p. 210 (1917).

(7) A. M. Field. Jour. Amer. Chem. Soc., 43. No. 3, p. 667 (1921).

(8) Prideaux, loc. cit., pp. 326-327.

CHAMPION FIBRE COMPANY MAKES GENEROUS DONATION TO VOCATIONAL EDUCATION FUND.

The Champion Fibre Company of Canton, North Carolina, has for sometime been taking a very prominent place among the leaders in the Paper Industry, who are affording opportunities for their men to qualify themselves through class work and study to become better workmen and better fitted for promotions to positions of greater responsibility.

At the recent Annual Meeting of the Technical Association of the Pulp and Paper Industry, the representatives of the Champion Fibre Company in attendance had an opportunity to learn in detail of the vocational education work being carried on by T. A. P. P. I., and examined the first two volumes of the series of five textbooks upon pulp and paper manufacture that are being published for wide-spread use throughout North America. When they were told that the vocational Education Committee of the Technical Association still needs a balance of $7,500. to complete the work which has been going on for the past three years, the gentlemen representing the Champion Fibre Company promptly pledged $500 towards the undertaking, the receipt of which the Committee now acknowledges with great appreciation.

Work upon the editing and publishing of the textbooks is going steadily forward and when completed they will afford the best means and industry in North America has yet given the men in it to qualify themselves for better workmanship and the occupation of positions of leadership.

PRACTICAL KINKS

(From La Papetrie).

Question: How can paper be made to have the same strength in machine and cross-direction?

Answer: The best method to obtain as little difference as possible in the strengths is to beat the different pulps separately according to their hardness, so as to obtain the same length of fibre in every case. Then send them to a mixing tank or to a large beater where they need only be given a light brush before sending them to the machine chests. M. L.

Question: In the mill where I work there is no color mixer, the color being added in the machine chests, which contain two beaterfuls. At times insufficient color has been put in, so that more must be added in the machine chests; and as these are not large relatively little water can be used. We make only white and very light colored papers, and the color is nearly always streaky, especially when using violet or Victoria blue. How can this be avoided?

Answer: For white or light-colored papers, I consider that a dilute solution (2 to 4 g. per l. = 1 to 2 oz. in 3 gal. of water) of the color should be made; with such a low concentration any error in the tint may be quickly corrected without any great risk. In the case of Victoria blue or of violet, put the amount of color to be added in half a pail of an emulsion of China clay.

Another method which I have found satisfactory consists in working up the color into a thick paste with acetic acid, 350 part by weight of the color to 100 or 150 parts by volume of acetic acid. Hot water is then added, the mixture is strained, and sufficient water added to give a solution of the desired concentration.

When violet and Victoria blue (which are both basic dyes) are used together, a solution of the two may be prepared. The blue is made into a paste as above described, the paste is dissolved in hot water, and the solution of violet mixed with it. C.H.

Answer: Some colors possess a great affinity for pure vegetable fibres, and hence have a tendency to streak when used with mixed pulps. In such a case, to obtain an even coloring with light shades, first add part of the required amount of alum, then the color solution, then the size, and finally the remainder of the alum. It is advisable to avoid any great excess of alum. A.V.

A.P.-C.

PAPER MANUFACTURE IN AUSTRALIA.

Recent experiments in the making of paper pulp from Australian woods are said to have given most satisfactory results. The test, however, is merely a laboratory one, and there is much reason to doubt the commercial feasibility of such a proposition.

A Practical Study of Corn Cob Utilization

By Dr. Frederick B. LaForge, Organic Chemist, Bur. of
Chem., U.S. Dept. of Agric. Chem. Age (New
York), 28, 332-6, (Sept. 1920). Abstracted
by A. Papineau-Couture.

Adhesive for Wall Board.

A review of the possibility of using corn cobs for the preparation of paper stock, adhesives, organic solvents, wood flour, artif. silk, etc., with cost and profits of a manufacturing plant. By digestion with water under press. a large amount (30 per cent.) of sol. gums and other carbohydrates can be removed from dried corn stalks. If this treatment is carried out under proper conditions, this material may have great value as an adhesive and as a source of furfural. The removal of as large an amount as possible of these carbohydrates reduces the amount of chemicals necessary for further treatment of the stalks. This is also true in the case of straw and probably in the case of almost all the other plant materials under consideration. A survey of the Corn Belt of the U. S. made with the co-operation of the Bureau of Plant Ind. has shown that certain sections, are capable of providing several mills the year round with 100 t. a day of cobs assembled within a radius of 30 miles at a cost of $4 a ton or less, 100 t. of cobs can be made to pield 45 t. of adhesive "A", 30 t. of adhesive "B", 35 t. of cellulose, 3 t. of $CaAc_2$, and 1.5 t. of furfural. Adhesive "A" may if desired be converted in furfural by heating it with dil. mineral acids, the 45 t. obtainable from 100 t. of cobs yielding about 8 t. Adhesive "A" is a thick, brown solution (about 32°Be) of gums which is obtained by heating dry, field corn cobs with water under press. and concg. the resulting ext. At the end of the heating operation a large part of the liquid has been absorbed by the undissolved residue, which must be subjected to press. to obtain the absorbed portion. The total amount of solution to be evaporated finally to the consistency of the adhesive is about 4.5 times the wt. of the cobs. The distillates contain AcOH which could be recovered at a profit. The cellulosic residue in the form of press-cake is the source of pulp, cellulose flour and adhesive "B". The principal use of adhesive "A" contemplated is as a substitute for the silicate of soda now used in fiber-container and wall-board manufacture. Three machine runs have been made at the plants of container-board manufacturers to test corn-cob adhesive under practical mills conditions as a substitute for silicate. The information obtained from these runs has proved that with slight change in the method of application cob adhesive is suitable for this line of work. Single-faced corrugated board may be pasted with no change in the present working conditions whatsoever. Observation for over a year of the condition of board so pasted and submitted to all common tests have failed to show any unfavourable changes. Pasting double-faced corrugated board on the machine in common use proved rather difficult. The application of heat as in common practice tends to soften the adhesive rather than to set it. Its use in this case seems doubtful without considerable change in equipment. The one run made to test cob adhesive for pasting 4-ply solid fiber board was partly successful, the principal difficulty being that the time required for setting seemed too great under the working conditions. As far as the finished board is concerned, very little difference in strength or water-resistance was observed when it was compared with the stock pasted with silicate. The board has been under observation for nearly a year. Another promising field of usefulness for adhesive "A" is as a substitute for dextrine and other organic gums and glues in the labeling of containers and in the manufacture of coarse envelopes and paper bag. It cannot be used for pasting the finer grades of white stock. For the sizing of walls previous to the application of paper, cob adhesive proved very satisfactory. Corn-cob adhesive has no food value and therefore has the advantage over gums and dextrines in not attracting insects. Adhesive manufactured from sulphite waste liquor are so similar to the material from corn cobs as to be undistinguishable from it except by chemical tests. Their physical properties, such as viscosity, time required for setting, strength, color, etc., are practically identical. Corn-cob adhesive differs chemically from the sulfite-waste adhesive, and on account of its high pentose content may be converted to a large extent into furfural. By treating adhesive "A" with dil. mineral acids, about 25 per cent of furfural, based on the total solids present, may be obtained. This material has some very interesting possibilities as a substitute for formaldehyde in the manufacture of plastics such as bakelite and as a solvent for certain gums and resins, and for cellulose acetate. It also finds application in dyestuffs manufacture. The cellulosic press. cake referred to is ground and subjected to a short treatment at atmospheric press. with 10 parts of boiling 1 per cent NaOH solution to separate the alkali-solution material from the true cellulose. About 40 per cent of the dry wt. of the residue is dissolved to a black liquid, which, after evaporation to the proper consistency, has fairly good adhesive properties. The very deep color of this material would make its use objectionable for most purposes. Its proper field seems to be in the manufacture of briquets and as a core-binder for which purposes it is being tried out. The washing of the black liquor from the cellulose is best accomplished by a series of 3 continuous filters. After washing the pulp is handled in the same manner as is woodpulp.

Experiments are described which have shown that cob pulp may be employed to a limited extent in several grades of paper, including newsprint. It should not be attempted to employ it in amounts greater than about 30 per cent in any case. If corn-cob cellulose is to be used as a substitute for wood-flour, it must be dried and ground. After this treatment it is very similar to wood flour but possesses a higher absorptive power. A brief description is given of the proposed process and the manufacturing plant, together with estimated costs and profits for a plant treating 100 t. of cobs a day, and for the treating 50 t.

James C. Fraser, woods superintendent here for a number of years for the Spanish River Pulp and Paper Company and a well-known lumberman, died suddenly at Sturgeon Falls, May 1. Mr. Fraser was in his office all day yesterday and did not feel any indisposition. He formerly resided in Massey, Ont., at which place interment will take place. He leaves besides his wife two sons and two daughters.

British Paper Makers' Association Meeting

(Special From Our London Correspondent.)

This year's annual meeting of the British Paper Makers' Association was held in London and the strike of coal miners, and the threatening attitude of other labor interests, compelled a regrettable cutting-down of the program. However, notwithstanding all the threats labor was throwing out, a good many paper makers assembled at the annual meeting and some interesting reports — for the members only — were read and discussed and one or two notable new features adopted.

The President of the Association (Mr. W. L. Tod) was in the chair and as one looked round the gathering only a few old familiar personages in the industry could be identified, the remainder being "new blood" who are stepping in to carry on the work of those able men who sat round the festive board from 8 to 12 years back, many of whom are dead, or retired into private life, or raised to some exalted position in the country's peerage. The gathering, however, was representative of some of the important mills.

Annual Report.

Mr. W. A. Foster, B.A., secretary to the Association, read the annual report. It stated, *inter alia*, "...The organisation of papermakers into sections has been proceeding for some years, and sections are in existence to protect the special interests of makers of newsprint, mechanical-free printings, esparto papers, brown wrappings, grocery papers, caps, M. G. and F. G. papers, fine writing papers and hand-made papers. The Association exerts no authority over the sections, leaving them free to develop on their own lines, but offers them hospitality and clerical assistance, and their work during the year has been of great value. The organisation of the paper trade as a whole has also made an advance during the year, and joint action has been found possible on a number of matters of common interest with the associations representing wholesale stationers and paper merchants, envelope merchants, envelope makers and manufacturing stationers, paper box and bag makers, master printers, wood pulp manufacturers and merchants and waste paper merchants. The value of combined action by the allied trades was specially evident in the case of the revised railway rates classification, where a co-ordinating committee was set up which ensured uniformity of policy on the part of all branches of the industry. The need for a strong manufacturers' association in every industry is well recognised, and as the sphere of Government interference with commerce continues the value of the Association will become more and more evident. Members will also be asked to approve of alterations of the articles of Association, intended for two purposes: to give the sectional organisations a more direct influence over the main body, and to bring the representatives of the districts into constant communication with each other. An industry whose mills are scattered over the Kingdom is apt to group its sympathies according to geographical accident rather than by community of interest, and the main reason of the revision of rules is to overcome this difficulty.

The avenues along which progress towards constructive work has been attempted are so numerous that it is difficult even to summarise them within the brief limits of this report. The revision of the wood pulp contract note and the revision of the codified trade customs are two great questions which have absorbed much time and energy without the achievement of a completed result, but as the co-operation of the respective allied Association has been obtained, there is good reason to hope for ultimate success. The maintenance of net terms of payment, the question of charging ordered weight or scale weight, and the possibility of stabilization of the market, have been subjects of discussion with the National Association of Wholesale Stationers. Methods of packing paper for transit by rail, the appropriate charges for transport of exports grass, and the many questions involved in the proposals for revision of the railway classification, have been discussed with the Railway Managers' Committee. The Association has been in close touch with the Board of Trade both on matters of urgency such as the coal strike, and on more permanent questions such as the regulation of imports and exports, the rectification of depreciated exchanges, and the protection of key industries...Members may rest assured that a continual watch is kept, day by day, on matters affecting the industry, and that the appropriate Government Department is immediately advised of the bearings of any proposal or possibility upon the papermaking industry."

Rectifying the Government Mistakes.

The report proceeds to deal with a subject that has been more than once aired in the "Pulp and Paper Magazine" and that is the Board of Trade's system in dealing with paper imports and exports. Mr. Foster says: "The Association has, at various times, been called upon to obtain statistics at short notice, and has been handicapped by the absence of permanent records of the state of the industry, and by the imperfect system of classification of imports and exports of paper adopted by the Board of Trade. This classification was revised at the beginning of the year and the Association now obtains from H. M. Customs each month a full analysis of the figures, giving the countries of origin and destination of all classes of paper imported and exported. A summary of the analysed figures is circulated to members and the full details are tabulated in the office so as to be readily available for future use.

A completely new departure in the Association's policy was marked by the unanimous decision of the last annual general meeting to establish a Technical Section, and the progress made is fully reported in the first volume of its published proceedings, which were available on the day of the second general conference of the section, April 13th. The work of the Technical Section during the year has covered a wide area. In addition to the general conferences, at which elaborate papers were read and discussed, local conferences of a less formal nature have been held by the Aberdeen London and Manchester local branches. The revival of papermaking classes in centres where they had been discontinued and their formation in new centres has been brought about; the section has also been successful in securing the continuation of the City and Guilds First Grade Examination in Papermaking Technology, which the Board of Education had proposed to abandon. The syllabus for this examination and for the final grade has been revised and amended on the recommendation of the Section Committee. The Section is in touch with the kindred institution in the U. S. A. and an interchange of publications is to be arranged. Conservations have also taken place with the Department of Scientific and Industrial Research and with the Department of Overseas Trade with reference to the use of various fibres for papermaking... The Association has to record its gratitude to Mr. Lewis Evans, J.P., F.S.A., the retiring president, for the gift of his library of books connected with the history of papermaking. This should be the nucleus of a technical library for the use of the industry and additional contributions have already been received from Mr. W. W. de Buriatte and Mr. H. Bradly. Mr. Wm. Raitt (India) has also given to the Association a set of curios and photographs illustrating the manufacture of paper in Kashmir. Members are asked to aid in the formation of an adequate library and museum. The historical side of the industry has not so far met with the treatment it deserves. The series of papermaking directions in our possession, for example, is far from being complete. Though it begins with 1853 the next copies available are 1862 and 1877, and the gaps certainly should be filled.

The last annual general meeting also appointed a special committee to formulate a scheme for encouraging and increasing export trade, and, along with a committee appointed by the National Association of Wholesale Stationers, this committee has made considerable exploration of the ground. There have, of course, been unforseen and unfortunate developments with regard to export trade, especially with India and Australia, but when the abnormal conditions come to an end, there may be possibilities in this direction upon which you will receive a report..."

The report covers all the year's work of the Asso- and first obtain the co-operation of the practical paper- by the Association. On the resolution of the President, seconded by Mr. A. Baker, the report was adopted.

Election of Officers.

Mr. Tod, who has well over 40 years experience in the paper mill, was re-elected to the Presidency. His past year in office has been a difficult one owing to the many ups and down the industry has had to face and he has piloted the Association through all the trouble with great tact.

Mr. H. Green was also re-elected Treasurer and Mr. P. H. Williams auditor.

The Technical Section.

Mr. A. Baker, the chairman of the Technical Section, presented his first year's report. It stated, *Inter alia,* "...The constitution has been carefully drawn and will, we believe, enable us to lay the foundation for the future upon a very broad base. The membership includes: 1 honorary member, 158 members, 41 associate members, 20 juniors members; total 220...As the President of the Association realised at our first meeting in Manchester, we have tapped a new source, mainly of younger men, who will take a keen interest in the work connected with the trade...It is our policy to go slowly, and first obtain the co-operation of the practical papermaker, engineer and chemist on matters of general interest — the rest will follow. There are sure signs that our efforts are meeting with success. I would, however, like to emphasize one point. My committee has devoted a large amount of time to the consideration of educational matters and we feel it is desirable that employers should take more than a passing interest in the education and training of their employees, especially those who will become the skilled workers of the future. There is a distinct need for some form of very elementary instruction in paper manufacture suitable for the average worker who enters the industry. We hope to do something towards meeting this deficiency during the coming year. Apart from the meetings of the members, the efforts of my committee have been largely of the nature of spade work and on that account it has been very gratifying to receive appreciation from unexpected quarters.

In one respect we have been disappointed. Only 26 firms have become members of the Section, which means that the Association as a body is not putting its weight behind the movement. Experience always shows that in new endeavors one finds less practical discouragement in the opposition of some people than in the inertia of others. That indifference should be shown by manufacturers is unfortunate, because we find many workers who would otherwise associate themselves with the Section, hesitate to do so because they fear their employers would not approve. It is well to remember that the application of advances in mechanical, electrical and chemical science to industry, and the evolution of any considerable development in manufacturing practice, is rarely the work of one mind, but invariably due to the alternate action of invention, design and discovery by the labors of successive or simultaneous workers. If the technique and economy of our industry can be improved by the pooling of knowledge and the interchange of ideas — and if the intelligent interest of the worker can be awakened and maintained in his daily task, then we, as employers, will surely receive some benefit as a reflex of that action."

The value of the Technical Section was eulagised by several members of the Association and it was mentioned that the subject of engineering was an important element in papermaking for inclusion in the syllabus prepared by the London City and Guilds Institute. Heretofore attention was concentrated on chemistry which was not sufficient. Evening schools were also advocated as a successful medium for helping the workers in mills. They were being tried and proved very beneficial.

The report was adopted and it was also agreed to draw the attention of all paper manufacturers to the importance of the Technical Section.

Export Trade.

Memorandums and articles of Association had been drawn up for the Export Association. This new body will deal with special points for the paper exporter and be a sort of information bureau. It is one of the Association's new adjuncts and Mr. T. Parker Smith and Mr. W. W. Birrell are getting it into order so as to make it useful for exporters.

Publicity versus Imported Paper.

Mr. Stanley Cousins moved: "That this Association, while recognising the good work done by the Secretary in his negotiations with the Board of Trade and Federation of British Industries, resolves to form a Publicity Committee to keep before the public and their Members of Parliament the critical position of the papermaking industry in this country, which is due largely to the depreciated value of continental currency, enabling imported paper to be offered at far below the cost of British mills, causing unemployment to an extent heretofore unknown." The resolution was passed and a small committee appointed to watch things.

The foregoing resolution shows the falling of the Association particularly when Scandinavian and German wrapping papers find a good outlet at present. On the newsprint side Lord Beaverbrook and Sir Edward Hulton, who recently replied to Mr. Stanley Cousin's appeal to include paper in the Anti-Dumping Bill, have again returned to the fray and after the meeting of the Association they wrote a letter calling attention to the "danger with which the consumers of newsprint in this country are threatened by the provisions of the Anti-

Dumping Bill." They said: "Today, the newsprint manufacturers are putting their product on the market at 4d (8 cents) a pound. The world price is 2⅞d a pound...The trouble in the newsprint industry is due to an attempt to keep up an inflated price at any cost—even of a tariff for which the consumer must pay."

Several newspapers are bolstering up attacks on the newsprint manufacturers and the pulp makers. It is to enlighten these gentlemen the Paper makers' Association has started the Publicity Committee and the sooner that body sets to work the better. One consumer writes that 6 cents a pound for newsprint is killing newspapers. "If the paper mills," he adds, "want the business they should set to work to arrange their paper-pulp contracts so as to be able to supply paper at that price. If pulp makers are stupid enough to continue their profiteering, they will not only kill the newsprint manufacturer, but the newspaper proprietor as well... newsprint users look with anxiety to the protection sought for newsprint manufacturers, which would leave the price of paper in the hands of the British paper ring. The experience of the paper control should not again be tolerated..."

CANADIAN PRESS LTD. MET.

The conspicuous improvement in news service during the past year was dealt with by President E. Norman Smith of the Canadian Press, Ltd., at the annual meeting in Toronto last week. Particular attention was directed to the value to the people of Canada as a whole of the impartial and accurate reports being sent from Ottawa covering Parliament and Government news. In referring to the close relations existing between the Associated Press and the Canadian Press, Mr. Smith said that the publishers and Editors of Canada have for many years had an abiding faith in the all-round merits of the Associated Press, and were proud of their alliance with that great organization in the United States.

The management presented a report on the present cable service, showing that the very limited funds now available were insufficient to cover more than a very meagre service of news, chiefly sport, from London, and asking that this assessment be increased to permit of more scope in the direct cable service. This recommendation was adopted by the shareholders.

A number of routine reports were received and adopted, including that of the auditors, and estimates for the next financial year were adopted.

Directors for the coming year were elected as follows:

Maritime division — G. Fred. Pearson, Halifax Chronicle; F. B. Ellis, St. John Globe.

Ontario and Quebec division — H. Gagnon, Quebec City Le Soleil; C. F. Crandall, Montreal Star; John Scott, Montreal Gazette; E. Norman Smith, Ottawa Journal; W. J. Wilkinson, Toronto Mail and Empire; W. J. McNair, Hamilton Herald; T. H. Preston, Brantford Expositor; A. R. Ford, London Free Press.

Western division — E. H. Macklin, Manitoba Free Press; R. L. Richardson, Winnipeg Tribune; Burford Hooke, Regina Leader; J. H. Woods, Calgary Herald, and F. J. Burd, Vancouver Province.

At a subsequent meeting of the Board of Directors, the following officers were elected for the coming year: President, E. Norman Smith; First Vice-President, E. H. Macklin; Second Vice-President, G. Fred. Pearson; General Manager and Secretary, J. F. B. Livesay.

MONEY TALKS.

On The Position of Canada's Pulp and Paper Industry.

The following tribute to the industry is quoted from a bulletin of the Royal Securities Corporation. In 1919 we published an announcement entitled "Why We are Backing Pulp and Paper Securities." In it we said:—

"But one thought is in the mind of Canadian big business to-day — EXPORT.

"And it is chiefly because Canada's pulp and paper industry has proved its ability to get and hold EXPORT business that we believe in this industry and are backing our belief with our resources.

"In 1890, Canada's exports of pulp and paper totalled $120. By 1912, they had grown to $14,600,000. By 1917 they had nearly quadrupled to $52,000,000. For fiscal year 1918-1919 they ran close to $100,000,000, nearly double what they were two years before."

The export figures for fiscal year ended March, 1920, were $113,091,704. For fiscal year ended March, 1921, they will come pretty close to $160,000,000—thus amply making good our forecast.

In spite of world readjustment conditions which cannot but temporarily affect the Canadian pulp and paper industry, as it has affected every other world industry, we once more put on record our confidence in the continued expansion, the fundamental soundness, and the national importance to Canada of her pulp, paper and lumber industry.

Growth Consistent and Permanent.

Its expansion is not due to temporary inflation. It is not the result of war conditions. It dates back to pre-war years and is consistent and steady.

It is a growth based upon the most solid of all foundations—world demand for a staple product, which, due to other countries' increasing lack of cheap raw materials, Canada can supply in largest quantity and at lowest cost.

The fact is, that no other country has such enormous resources of cheap pulpwood in close proximity to such abundant water powers, as has Canada. She can therefore compete with the world in low cost production—and in pulp and paper, as in everything else, the world buys in the cheapest market.

So it is that the pulp, paper and lumber industry has come to be the most important of Canada's manufacturing export industries.

Markets Assured.

Foreign competition is to be expected; but Canada has no reason to fear it. With her low-cost power and wood, and the increased efficiency of personnel and plant, Canada can, **and will,** more than hold her own against all competitors.

At her very door, within easy rail-haul, lies the greatest pulp, paper and lumber consuming country in the world.

United States forests have already reached a degree of depletion that makes paper manufacturing costs very high. Production in the United States has already passed the maximum of its possibilities. Since 1909 newsprint consumption in the United States has increased 100 per cent; production has increased only 30 per cent. In 1920, the United States produced only 70 per cent of the newsprint it consumed; 95 per cent of the amount imported came from Canada. The United States imports from Canada two-thirds of the pulpwood it consumes.

As the years go by, not only the United States, but other countries as well, must have Canadian pulp and paper in increasing quantities.

True, there has been a temporary slackening of demand for some pulp, paper and lumber products, due to general trade conditions, but already there is a stiffening of demand and an increase in mill orders.

World industry is not going to collapse. As long as business is carried on, this and other continents must have Canadian pulp and paper.

Therefore, pulp, paper and lumber production in Canada is still in its infancy.

Bulkwark of Canadian Credit.

The pulp and paper industry has never had or needed tariff protection. Unlike some other Canadian industries its prosperity is in no way dependent on tariff provisions.

Into the American market its products are drawn irresistibly by the magnet of a high exchange premium, resulting in additional profit to the Canadian pulp and paper companies and operating more than other factors to pay Canada's adverse trade balance with the United States.

Many Canadian exports, wheat for example, cannot be readily sold abroad because of the depreciation of European currencies in terms of the Canadian dollar.

But both demand and exchange combine to cause a steady stream of Canadian pulp and paper products into the world's best market, to be paid for in American dollars, the least depreciated of the world's currencies.

Canada's pulp and paper industry is proving one of her most valuable assets at a time when Canadian credit must be maintained at its highest.

Attractive to Investment Capital.

True, prices for pulp and paper products may go lower, but they can go far and still leave a satisfactory margin of profit, provided by increased production efficiency and reduced production costs.

It is true also that the speculative era in pulp and paper shares is over for the time being, and that not a few speculators have been taught a salutary lesson.

But the Canadian pulp and paper industry is not run for speculation. It is too great—and too necessary to national welfare.

It is the result of this self-same magnitude and national importance, as well as of the fundamental security offered by mortgages on vast areas of pulpwood and enormous resources of water powers, that is attracting a flow of both American and Canadian investment capital into new issues of Canadian pulp, paper and lumber securities.

Why New Financing?

The financial necessities of the Canadian pulp and paper industry have always been, and always will be, provided for by the Banks and Investment Bankers responsible for financing the industry. It is quite as much of a national necessity to finance the export to the United States of our yearly output of pulp, paper and lumber as it is to finance the export of our wheat crop.

The reasons for current financing by some of the larger pulp and paper companies are sound and may be stated quite simply. During the past few years the larger Canadian companies have expended many millions, for the most part out of earnings, to increase plant capacity and to add to supplies of pulpwood and power. This increased capacity, now coming into effect requires larger working capital. Also, pulpwood of which some companies use as much as 500,000 cords per annum has risen in cost from $6 to $12 per cord, necessitating largely increased working capital. Is it, then, a matter of wonder that some of the larger Canadian companies are now borrowing to the extent of one-half to two-thirds of cost of plant extensions, thereby replacing working capital expended? That most of the Canadian pulp and paper companies have been able to make their extensions out of earnings, with as little borrowing as has taken place, is in reality a tribute to their earning power, and is one of the soundest reasons we know for the fundamental strength of the industry.

Every world industry is financing at this time: but very few indeed have the assets and earnings on which to borrow that are shown by the strong Canadian pulp and paper companies.

PULP AND PAPER IN MEXICO.

Owing to the circumstance that Mexico's large paper mills—"San Rafael"—were not in a position to manufacture their own chemically prepared woodpulp, large shipments were recently imported from the United States and some 160 tons, valued at over $13,000, from Canada. Before the war, Mexico imported nearly all the woodpulp she required from Germany, Sweden and Russia, to the value of about $500,000 annually. Recently, however, owing to the high prices of American and Canadian pulp, it has paid to manufacture woodpulp in Mexico, and plants which were shut down for periods during the revolution are now running full time. It is not likely, now that the two or three large paper plants in Mexico have their own pulp mills, that any appreciable quantities of either sulphite or mechanical will be required from outside.

One of the few items of American trade with Mexico which shows a falling off in 1920, as compared with 1919, is that of paper—$205,546 for the first ten months of 1920 as compared with $385,453 for the corresponding period of 1919. This may be explained by the reopening in 1919 of the San Rafael paper mills which had been closed down for two or three years because the Zapatista bandits liked the comforts surrounding these plants and appropriated them for themselves. San Rafael makes most of the newsprint required in Mexico which is probably not more than 100 tons a day—in fact, this mill is now exporting newsprint to the United States. Wrapping papers and cardboards are also made by San Rafael—sufficient to supply the whole of central Mexico. Finer papers are imported, however, and many coast districts import their paper supplies from abroad. Before the war, Mexico bought more paper from Europe than from the United States, and the writer recently noticed several stationery stores in Mexico featuring German paper products, although most of the paper products entering the country since 1914 have come from the United States.

Wallpaper is used extensively in central Mexico. Only the best and most up-to-date patterns will find a market, because wallpaper is bought solely by the well-to-do. In 1912 Canada exported nearly $12,000 worth of wallpaper to Mexico; in 1913, $4,239, and in 1920 only $1,713. During the fiscal year 1920, however, other papers, excluding newsprint, were exported from Canada to Mexico to the value of $10,768.—Trade and Commerce Bulletin.

FOREST CONSERVATION AND PERPETUATION.

We are told by competent authorities that the destruction of the spruce forests of the United States, east of the Rockies, is nearing completion. Fifteen years more at the present rate of consumption will see the end of their standing spruce and balsam, says Mr. R. O. Sweezey in a special article to the Montreal Gazette.

This is most serious, because spruce and balsam are the only really suitable woods for the manufacture of newsprint paper and sulphite pulp. Pine, of which there is a fair young crop growing up again by natural restoration, both in the United States and Canada, is suitable as a pulp only in the manufacture of kraft papers.

If such is the condition in the United States' forests, what about the forests of Canada? At the present rate of spruce and balsam consumption for pulp paper and lumber in Canada, plus the fire and insect damages and increasing demands, our forests can last about fifty years.

From a negligible production in 1900, the pulp paper and pulpwood consumption and exports of Canada have risen to the equivalent of over three million cords (spruce and balsam). Add to this the equivalent of four million cords (spruce and balsam) that goes into lumber, plus fire and other losses, and we find (bearing in mind also the increasing demand) that a consumption of ten million cords per year is in sight. Now our forest capital of available spruce and balsam in Canada scarcely exceeds five hundred million cords. In the past we have lost more by fire than we have cut. Over 75 per cent of the present forest area of Canada has been burnt over at least once in the past two hundred years. We know what has happened in the United States, and we know that when the destruction has been completed there a further heavy tax must fall on Canadian forests; we also know that the world consumption of paper is increasing every year. We know a lot of things, but democratic like, what is everybody's business we regard as nobody's business.

Hence, forest conservation and scientific forestry are merely expressions that call forth the cynical repartee of the so-called practical logger, a symptom equalled only by the evasiveness of the responsible managements who, having started a toy nursery near their mills, imagine that they have solved the problems of the forest once and for all.

The first necessity in forest conservation is obviously protection from fire, and for this — thanks to the untiring energy and dogged persistence of Ellwood Wilson, of the Laurentide Company, — Quebec Province at least is now organized for fire prevention and fire-fighting to the point of having thus far saved the country scores of millions of dollars that would otherwise have gone up in smoke.

The other provinces, except New Brunswick, are far behind in this respect, though their apathy is as naught beside the criminal destruction that the Canadian Government Railways are every summer responsible for. Private railroads come under the forest protective rules of the Railways Commission, and no fires are set along their lines. Government Railways, however, are a law unto themselves, privileged to burn down the national heritage, and now that the Grand Trunk and Canadian Northern are added to this management, we may expect fire losses to keep pace with operating losses, if they do not exceed them.

What Quebec Province is doing for fire protection, the rest of the country can do. What Europe has, all too late, awakened to do in scientific forestry, we can start before it is too late. True, our problems differ in many respects, but they can be solved. We must stop eating up the principal and live upon the interest, or increment, of the forest.

Trees grow by accretion, the larger the tree the greater the volume of growth in a year, up to the point of maturity. Instead of cutting an area clean, we must spread our operations over larger areas, select only full-grown or nearly full-grown trees, leaving the younger to grow up to be in turn cut at or near maturity. A combination of natural and artificial reforestation is necessary to develop the maximum production on a given area. This is known as scientific forestry. That we can expect a great deal of help from natural restoration is obvious from the fact that all our present forests have grown from nature. At present we select the spruce and balsam and pine for cutting, leaving the hardwoods to gain supremacy, and eventually choke out the soft woods as in the Eastern States. This is only one, but a serious one, of the problems confronting us.

The solution of these forest problems is necessarily costly. Hitherto the lumber and paper industries made insufficient profits to enable them to cope with the difficulties, but the amalgamating of interests and recent enormous growth of several of the leading pulp and paper companies should enable them to attack the question of forest conservation and perpetuation with every confidence of success.

In this country it should be possible to obtain an annual increment of three per cent on our estimated capital of five hundred million cords. This could supply all the paper requirements of the world.

The attainment of such an ideal can hardly be expected, nor can even a fair part thereof be realized short of many years of grinding and struggling against the fanatical jeers of the so-called practical logger, no less than against the ill-advised application of theories from the utterly unpractical mind.

We are not yet practising scientific forestry in any of the present large logging operations in Canada. The Quebec Government authorities are endeavoring to formulate laws for the purpose, and so are the New Brunswick authorities, but their efforts, though laudable, show an insufficient grasp of the practical details.

That there are proper solutions to the difficulties cannot be denied. It is largely a question of dollars and cents, with the argument for immediate profit outweighing for the moment all arguments for the long-term profit.

Columbia University, New York, has arranged a course on pulp and paper manufacture to be given at the coming Summer session. Leading experts in the industry have been secured as instructors, among them Hugh P. Baker, Secretary of the American Paper and Pulp Association; Fred. C. Clark, Director of the Department of Technical Control, American Writing Paper Company, Sigmund Wang, Chief Chemist of the Riordon Company, Ltd., and others equally prominent.

Our prayer should not be for a different kind of work, but for strength to do well that which is confided to us.

Abitibi Company Pioneers of Ontario's Northland

By A. R. R. JONES.

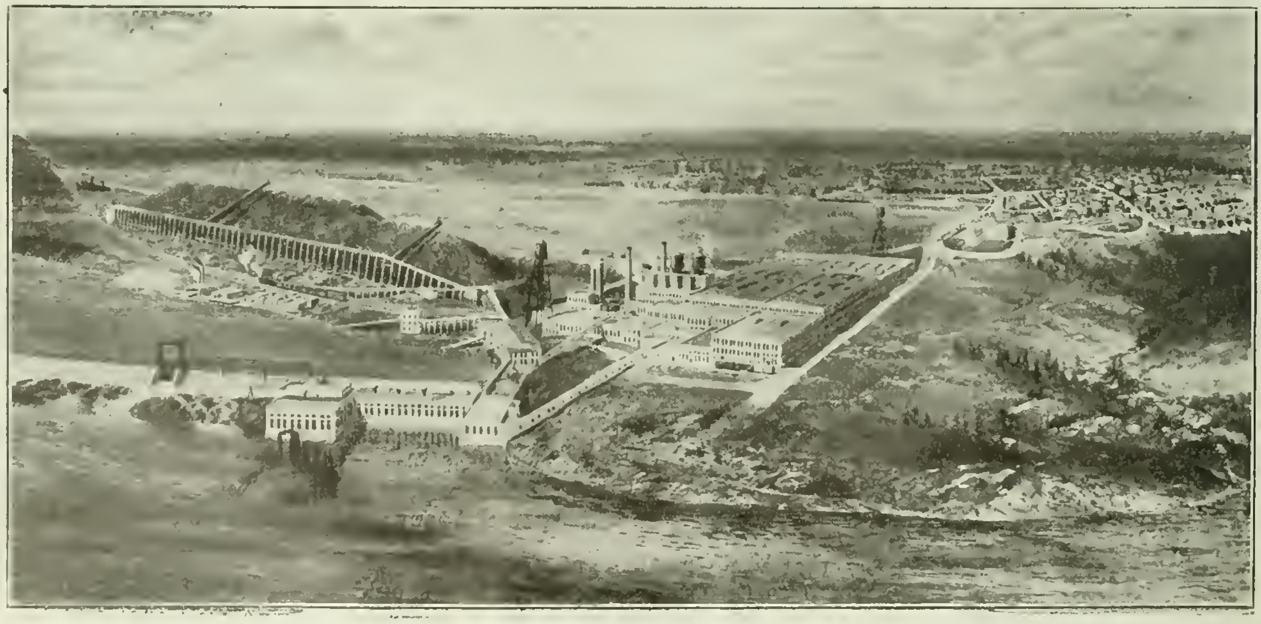
The story of the organization of the Abitibi Power and Paper Company, Ltd., is one far removed from the common run of the stories of the founding of successful business enterprises. It is no humdrum tale of just erecting a plant in a suitable location and then sitting back to watch the wheels go round. It is a story rather to grip the imagination of all red-blooded men. Canada is a land which is full of the triumphant achievements of man in harnessing to his uses the silent and solitary wastes of Nature. But even in such a land, the accomplishment of those responsible for the guidance of the destinies of the Abitibi Power and Paper Company must be reckoned an eminently notable one.

Today, Iroquois Falls, where the Company's fine plant stands, is a thriving, bustling town where the wheels of commerce turn apace—a veritable hive of human industry—a town well planned and well laid out, where municipal government is good and where civic patriotism is strong. Eight years ago, it was scarcely on the map. It was seven miles from a railway station. The land was, for the most part, virgin forest known to few and those few only surveyors or prospectors. To organize in such a location an enterprise which has become one of the largest individual pulp and paper plants in the world was a Herculean task. Its completely successful accomplishment speaks volumes for the men who took that task in hand. They must have been—in fact, they were—men of large vision, of boundless energy and enthusiasm for their project, and, above all, men of courage that neither flagged nor failed.

As just an instance of the many difficulties that had to be surmounted—difficulties which might well have daunted any men of force, less steadfast or of fibre less staunch than those who have made the name and fame of Abitibi—it may be observed that, at the time when building operations were decided on, all building material, except the lumber, had to be towed on barges by gasoline launches from Matheson, on the Temiskaming and Northern Ontario Railway, down the Black and Abitibi rivers to the mill site. The mill itself begun in the spring of the year 1913, and was well advanced when the first train over the new spur from the Temiskaming and Northern Ontario Railway ran in with steel in September of the same year.

Of course, the towing of building material down rivers filled with snags and deadhead was not the only —perhaps it was not even the most formidable, although certainly not the least obvious—obstacle that had to be surmounted. There was the difficulty of interesting capital. Then, again, the mill site, as has been indicated above, was in the unpeopled wilds. This, of course, meant that there was on accommodation. Nor were there any near-at-hand sources of supply. In a word, there was nothing but pulpwood all around. The men had to be housed and fed. Their social and intellectual and spiritual needs had to be ministered to. Hence, the land around the mill site had to be cleared, houses built and equipped, water and electric light systems installed, and the usual concomitants of civilized life—churches, recreation rooms, stores, dairies, laundries and so forth—to be established. With regard to some of these a word or two will be said later. For the moment, suffice it to say, with respect to the early construction of the plant that, started in the spring of 1913, a good portion of the groundwood mill was completed in the following winter, and in August, 1914, the first shipment of pulp was made. Then the sulphite and paper mills were pushed ahead, and in July, 1915, paper was shipped.

It was from such beginnings that the plant has grown to its present enormous capacity. With its new equipment, already installed, it will rank as one of the largest newsprint mills in the world, with a capacity of 150,000 tons of finished paper per year, and a total capacity in saleable products, including excess groundwood and sulphite, of well over 220,000 tons per year. This total is made up as follows: finished paper, 150,000 tons; groundwood 50,000 tons; and sulphite pulp, 20,-



A view of the mill and town site as seen from the air.

000 tons. With reference to this large output, it should be added that all the finished paper that the Company is capable of producing this year has already been sold, and a large part of its product for a period of five years has been contracted for.

The mills are of steel and concrete fireproof construction throughout. They are equipped with the most modern and efficient machinery known, and are capable of continuous operation at high capacity with a minimum of maintenance and depreciation. As regards equipment, it should be mentioned that the new equipment includes two new Walmsley machines 232 inches wide—the biggest paper machines ever made—and a new Pusey & Jones 160 inch machine. All three machines are already installed, the Pusey & Jones machine is ready to run right now, and the Walmsley machines will be ready to run next month. Special precaution has been taken for the elimination of fire risk by the use of steel and concrete in all structure, and by the installation of a complete sprinkler system in all buildings, an efficient hydrant service in yards, high gravity water pressure, and ample fire pump capacity. The employees at the plant number 900 some at present but with the producing capacity to be doubled up by the machines mentioned above, about 1,300 persons will be employed in three months' time. Mr. R. A. McInnis is the mill manager.

The Company is in a wonderfully fortunate position as to its pulpwood supply as its pulpwood limits cover an area of over one million acres, which is held on lease from the Government of the Province of Ontario. The location of these limits is adjacent to the mill at Iroquois Falls being situated along the Upper and Lower Abitibi Lakes and along the Abitibi and tributary rivers. The limits are estimated to contain over five million cords of spruce and other woods suitable for pulp and paper-making. In addition to this the timber tracts lying to the north of the Abitibi Limits contain in the neighborhood of fifteen million cords of wood suitable for paper-making. The Company is pursuing a general policy of encouraging surrounding settlers to cut the timber off their lots and sell it to the company. This colonization policy should be of material advantage to Northern Ontario in the opening up of this sparsely populated country. The woods department is under the control of Mr. A. W. Hennessy with headquarters at Iroquois Falls Ont. This organization is responsible for the cutting of the logs in the bush and the delivering of them at the jackladders of the mills at Iroquois Falls. About 2,500 men are employed in forestry operations in the wintertime.

The power development of the Company is primarily held on lease from the Government of the Province of Ontario, running for a period of fifty-two years. The watershed of the Abtibi River above Iroquois Falls comprises an area of 6,000 square miles, of which a large part is the water surfaces of lakes and rivers. The Upper and Lower Lakes Abitibi with an area of three hundred and fifty-five square miles, form an enormous storage pond immediately behind the company's power sites. The output of this huge storage is controlled by a storage ram, with eight discharge gates at Couchiching Falls, the natural outlet of the lakes. This insures a practically uniform discharge for the operation of the paper mills, and the enormous storage eliminates the possibility of any shortage of water. The three power sites at Iroquois, Twin and Couchiching Falls aggregate a total development of 50,000 h.p. of which that at Iroquois Falls, approximating 23,000 horse power, is completed and in daily operation, while that of Twin and Couchiching Falls is only partly developed. At Iroquois Falls the development consists of fourteen 2,000 H.P. Holyoke turbines, operating under a head of 42 ft., ten of which are directly connected to pulpwood grinders. The other four operate four Westinghouse 1,250 K.V.A. generators which supply the power for the mills and lighting for the town of Iroquois Falls. The waste water at this point is handled by means of a 40′ x 24′ "Stoney Sluice" built by the Dominion Bridge Co., Ltd., of Montreal, Que.

The fine new Iroquois Falls school house.

The Company leaves nothing undone which is calculated to add to the comfort and convenience of those who serve it. It has built a departmental store where goods can be purchased at little more than cost. It has erected the finest hotel in the North Country, with large reading, writing, dining, reception and card rooms, and with sleeping accommodation for two hundred people. At this hotel, which is under the management of Mr. R. Graves, formerly manager of the Place Viger Hotel, Montreal, more than a thousand meals a day are served, on an average.

Mr. F. H. Anson, President.

There are three churches which the people themselves have built. One of these is for Roman Catholics, another for those belonging to the Church of England, and the other for the united Presbyterians and Methodists. The townsite contains approximately 200 houses of the detached and semi-detached type, varying in size from the four-roomed bungalow to the eight-roomed house. They are built with considerable taste and nearly every house has its own verandah, with a spacious garden both front and back. Macadam roads are laid down throughout the town with concrete curbing and wooden side-walks. The sewers are also laid throughout the town, and a complete water system is provided from the pumping station at the mill. A bank, a hospital, a fire brigade and a police force have been added to the conveniences of the community. The Company owns and publishes a brightly-written newspaper. There is an excellent school, employing seven teachers. In short, the activities of the Company have resulted in making of Iroquois Falls a thoroughly attractive town, possessing all modern conveniences.

Mention should be made of the successful endeavors that the Company is making to stimulate among its employees a genuine interest in their work. In this connection, very valuable work is being done by means of vocational educational lectures delivered by the Company's experts. Then there is the scientific Forestry department, which has established a nursery from which to reforest cut-over areas, and is examining many other woods besides spruce and balsam in regard to their fitness for the North Country and their use in the industry. The Service division, again, in addition to the usual efficiency and statistical work, undertakes very valuable research work in a completely equipped laboratory. The Employment department, in addition to engaging all the employees, does a tremendous lot, in the way of adjustment of grievances, to make the wheels run smoothly.

Perhaps enough has been said here to give some idea of the sort of concern that the Abitibi Power & Paper Company is—of its up-to-date plant, its favored position as regards both supply and output, its enterprise, its energy, its warm human sympathy with all that tends to the welfare and well-being of all connected with it. Mr. F. H. Anson is the president of the Company, and has held that office since its inception. Messrs. Shirley Ogilvie and Alexander Smith are its vice-presidents; and the other directors are Messrs. W. A. Black, George E. Challes, W. K. George, G. H. Kilmer, K. C., Victor E. Mitchell, K.C., D.C.L., and Sir Thomas Tait, Mr. W. H. Smith is the treasurer, and Mr. L. R. Wilson the secretary of the Company.

Mr. L. R. Wilson, Secretary.

A BEAUTIFUL REPORT.

A Government official's report is seldom a work of art but such a statement in no way applies to the report for 1919 by Forrest H. Colby, Forrest Commissioner for the State of Maine. We have never seen and we doubt if there has been produced, at least on this continent, a report that could compare in the beauty of its execution both in print and illustrations, with this one. It is printed on coated stock in a brown ink which gives a most attractive appearance. The illustrations are not only beautiful in themselves but each one carries its own tale, including of course, the pictures of the pigs and porcupines. The book contains 163 pages with a picture on almost every other page and covers not only in detail but in an interesting manner, the activities with regard to forest protection and conservation in Maine. Credit should be given to the Journal Printing Shop and Bindery of Lewistown, Me., as well as to Mr. Colby's department for the appearance of this work.

Books for Papermakers Library

Compilation by Secretary Keenan of TAPPI.

Numerous inquiries regarding desirable books for the papermakers' library have reached us from different sources. In reply the following list is suggsted. When the text books upon papermaking now in preparation by he Joint Vocational Education Committee of the Technical Associations of the United States and Canada are published they should be added. Any of these books may be ordered from the Pulp and Paper Magazine with remittance in U.S. funds.

Art of Papermaking, The—By Alexander Watt. (D. Van Nostrand Co., $5.00).

Dyeing of Paper Pulp, The—By Julius Erfurt, English Edition by Julius Hubner. Published by Scott, Greenwood & Son, 8 Broadway, Ludgate Hill, London, E.C. and sold in the United States by D. Van Nostrand Co., New York. ($5.00).

History of Paper Manufacturing in the United States—By Lyman Horace Weeks. An account of the origin and development of paper manufacture in the United States from 1690 to 1916. Contains illustrations of principal mills and numerous portraits of leaders in the industry. Published by Lockwood Trade Journal Company, 10 East 39th Street, New York. ($7.00).

Lockwood's Directory of the Paper and Allied Trades—Published by Lockwood Trade Journal Company, New York, 1921. ($7.00).

Modern Pulp and Paper Making—By G. S. Witham, Sr. This is a practical American treatise which gives particulars of every phase of papermaking from the saw mill to the finishing room. Published by the Chemical Catalog Company, 170 Metropolitan Tower, New York. ($6.00).

Paper—By H. A. Maddox. This is a popular treatise. (Isaac Pitman & Company, New York. 75 cents).

Paper and its Uses—By E. A. Dawe. Second Edition. Published by Crosby, Lockwood & Sons, 7 Stationers' Hall Court London, E.C. (New York, D. Appleton & Co. $4.00).

Paper Mill Chemist, The—By Henry P. Stevens. Second Edition, 1919. (D. Van Nostrand Co., $4.00).

Paper Technology—An elementary manual. By R. W. Sindall (D. Van Nostrand Co., 8 Warren Street, New York. $4.00).

Practical Papermaking—By Geo. Clapperton. (D. Van Nostrand Co., $5.00).

Chemistry of Papermaking—By Griffin and Little. This book has been out of print for some time. A photographic reproduction of it was issued from Switzerland some time ago when a copy was procured from the Baker Company at Cleveland, O. The book can be obtained through G. E. Stechert & Company, 151 West 25th Street, New York. It is still a valuable reference book. ($6.00).

Recovery and Manufacture of Waste Paper, The—By James Strachan, of the Donside Paper Company, Aberdeen, Scotland. This is a most useful and suggestive work which can be recommended to all practical papermakers. It is on sale by Spon & Chamberlain, New York City. ($4.50).

Technical Methods of Analysis—By Roger Griffin. Chapter VIII. describes methods of analysis of cellulose in wood, woodpulp, black liquor, white liquor, the various chemicals used in making pulp and paper. The physical testing of paper is discussed. (Arthur D. Little, Inc., Cambridge, Mass.)

Researches on Cellulose—By Cross & Bevan. A series of publications in three volumes of value to the practical papermaker as dealing with the chemistry of cellulose. The latest edition should be purchased as well as the earlier issues. The dates are: 1895, 1900, and 1905. (D. Van Nostrand Co., New York. $5.50).

Testing of Wood Pulp, The—By Sindall & Bacon. This book is divided into two sections: (1) The sampling and testing of pulp for moisture; (2) The testing of wood pulp for its bleaching qualities. It also contains a chapter on the Chemistry of Bleaching. Published by Marchant, Singer & Companw, 47 St. Mary Ave, London, E.C. (D. Van Nostrand Company, New York, $3.00).

Text Book of Papermaking, A—By C. F. Cross and E. J. Bevan, Fifth edition, containing additional matter, and in part rewritten with collaboration of J. F. Briggs, (New York, Spon & Chamberlain, 120 Liberty Street, $10.00).

Treatment of Paper for Special Purposes, The—By Louis Edgar Andes. The Processes of manufacture for a variety of paper products are outlined in this book of 239 pages. It is not a working manual, though it contains a collection of formulas and furnishes for parchment and greaseproof papers, as well as for a whole series of novelty papers. The book is for sale in the United States by D. Van Nostrand Co., New York. ($3.00).

Wood Pulp and its Uses—By Cross, Bevan & Sindall. (D. Van Nostrand, O., 8 Warren Street, New York. $3.00).

Chemistry of Pulp and Paper Making—By E. Sertermeister, of S. D. Warren Co. The latest and best on the subject. It represents American practice and knowledge.(John Wiley & Sons, New York. Renouf Pub. Co., Montreal. $6.00).

GERMAN BOOKS.

Papierpruefung—By Wilhelm Herzberg. Fourth edition 1915. Julius Springer, Berlin.

Die Chemie der Cellulose—By Carl G. Schwalbe. 1911. Borntraeger Bros., Berlin.

Die Chemische Betriebskontrolle in der Zellstoffund Papierindustrie—By Carl G. Schwalbe and Rudolph Sieber, 1919. Julius Springer, Berlin.

Warmerwirtschaft in der Papier-und Zellstoff Fabrication—By G. Lest. M. 16.

Buntpapier Fabrication — By August Weichelt. M. 30.

Handbuch der Papierfabrikation—By Carl Hoffman. 2 Bander. Ungeb. M. 200.
Zurich, Switzerland.

Lexicon der Papierindustrie—By Lenart Akesson-Amerin. Second edition, 1905. Technische Bureau.

FRENCH BOOKS.

Publications in French on paper technology are listed by the publisher of Le Papier 16 Rue du Rocher, Paris, as follows:

Fabrikation du Papier—By A. Blanchet. (6 fr.)

Alfa er Papier D'alfa—By H. de Montessus de Ballore. (9 fr.)

La Frabikation des Celluloses de Papeterie Autres que Celle du Bois—By H. de Montessus de Ballore. (24 fr.)

Vegetauxpropres a la Frabication de la Cellulose et du Papier—By L. Rostaing, M. Rostaing and Fluery-Pierce du Sert. (20 fr.)

..Precis Historique, Descriptif, Analytique et Photo-Micrographique des Vegetaux propres a la fabrication de la Cellulose et du Papier—By L. and M. Rostang and Fluery Percie du Sert. (20.)

Le Papier.. Etude sur sa Composition—By E. Hoyer (6 fr.)

L' Helice en Papeterie—By E. Pistie. (4 fr.)

ON A C.P.R. PULLMAN CAR.

Out of the Canadian Wilds, just after passing an isolated settlement, there has come into our car an Englishman. He was self-heralded for quite a time in unmistakable accents from the passageway.

His entry revealed a rather tall individual of three-quarters age, attired as woodsman or game hunter. In one hand he carried by a handle at the top end, a round elongated cotton duck pack, and in the other what appeared to be a pair of field glasses in a leather case. He was very erect, clean shaven, highly weathered and leathery, altogether of a type which was familiar in the days that preceded prohibition.

He had undoubtedly imbibed too freely of the cup that inebriates, for after being allocated to a vacant section of the Pullman, his state of mind required that he continue to voice a mental situation known only to himself.

A little before 6 P.M. he showed signs of interest in his pack, lifted it and placed it between his knees, opened it and extracted from its depths a monocle, which he gravely hung by its neck ribbon on a window hook. He then proceeded to discharge a duty to his fellow men.

After considerable diving into the bag he produced the articles he was looking for, and laid them upon the opposite seat, stood up and began to undress by removing a heavy leather-lined coat, a leather vest, a knitted waistcoat and a flannel shirt, which he pulled off over his head. This process exposed a fairly clean looking lambs wool under garment, which he mercifully was not tempted to take off. He carefully folded the discarded apparel and pushed them forcibly into his pack.

From his effects he next produced a starched, rather soiled and much wrinkled "Dickie" and hung it on his chest, then a collar and a black bow tie were adjusted in place.

While this was in process of execution he behaved exactly as though his astonished audience did not exist. He never once looked at a single person as he solemnly lifted up and shook out what proved to be a very wrinkled Tuxedo dinner jacket and put it on over his woollen garment and "Dickie."

Then turning completely around, he squared his shoulders, at the same time raising both elbows sideways, puffed out his chest and gave a consequential little cough to the audible satisfaction of the entire car. He then sought his monocle and donned it, though he did not at this time place the glass in his eye, and sat down.

By a coincidence, almost immediately the black porter appeared for the first time during the entire performance and the look on his face was marvelous to behold, at the moment when he first saw the transformation in his latest guest. The guest himself at once arose, as if at the expected invitation of the porter, and announced that he was "ready for dinnah."

The figure was most comical as he strode out of sight, a contrast in black and tan, as his khaki pants were encased at the extremities in heavy half-knee length leather laced boots.

When I, with others, reached the dining car there he was, at a table by himself, a really distinguished looking man, sitting with head erect, a perfect gentleman to outward appearance—from the table upward.

He is now enjoying his after dinner cigar in the smoking room, his roughly clothed legs and feet exposed and utterly belying the elegance of his upper half but he is as sober as a judge. So far as I know, he has spoken to no one but the porter, nor anyone to him. He is not now talking to himself and does not appear in the least embarrassed by the curious glances and suppressed mirth of his fellow travellers.

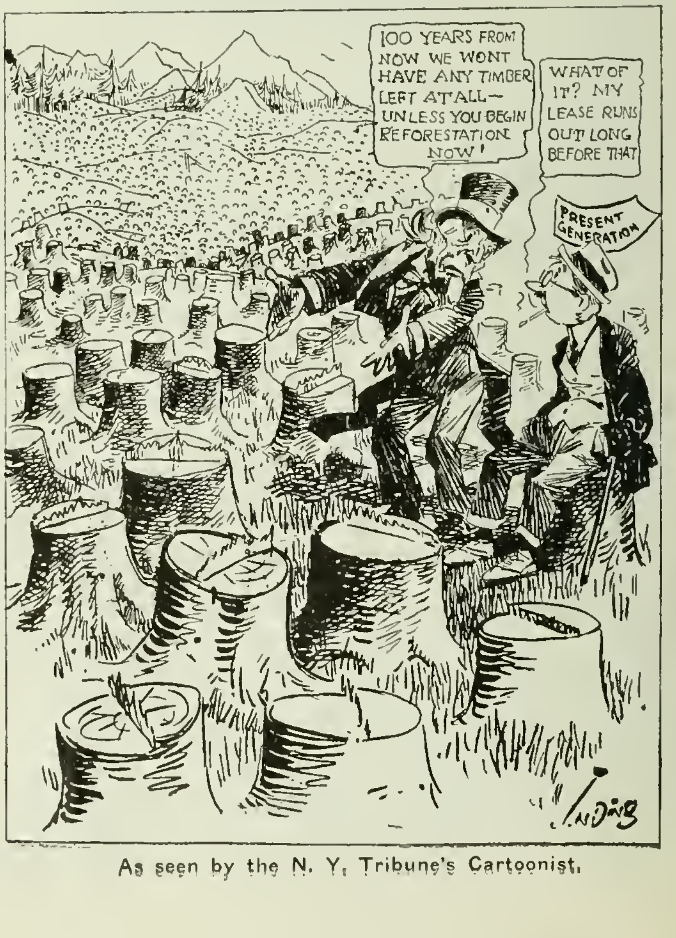
The poor fellow came suddenly among us from out of the silent snow-filled woods, a pitiably lonely being apparently a misguided relic of other days. I would like to know his history, from whence he came, to what mode of life he is going, and under what circumstances, and where he learned to put on a dignified comportment amongst his fellow men.

Maybe he holds a proof that after all, there are "More things in heaven and earth than are dreamed of in our philosophy."

Note: Having given our readers the chance to enjoy this bit of humor as well as to guess as to its origin, it should be explained that it is an extract from a letter written by J. B. Purves of the Port Arthur Shipbuilding Co. to his home office. Surely selling pulp and paper machinery has some compensations.

FIRE AT RUTHERGLEN.

A portion of the machine house roof and other serious damage was done by a fire which broke out a few days ago in the Clyde Paper Mills, Rutherglen, N.S.


100 YEARS FROM NOW WE WONT HAVE ANY TIMBER LEFT AT ALL— UNLESS YOU BEGIN REFORESTATION NOW!
WHAT OF IT? MY LEASE RUNS OUT LONG BEFORE THAT
PRESENT GENERATION
Ding

As seen by the N. Y. Tribune's Cartoonist.

OUR GREATEST SCIENTIFIC OPPORTUNITY — WOOD HYDROLYSIS.

(Editorial from The Canadian Chemical Journal)

With the food problem throughout the world so acute that famine prices prevail, and with our gasoline supply rapidly being exhausted, can we much longer refuse to consider wood waste and other cellulosic materials as a source of relief for these conditions? Has the time not come when adequate steps must be taken to prove or disprove the claim that in these forms of material we have a possible solution for both these problems? Sir William Crookes predicted that the two greatest chemical achievements of the present century in relation to the welfare of mankind would be the fixation of atmospheric nitrogen and the conversion of cellulose into sugar and alcohol, and it seems likely that this prediction will be sustained.

Cellulose and starch have the same chemical composition, and it has been pretty well demonstrated by the work of Classen, Tomlinson and others that at least a goodly percentage of cellulose, like starch, can be commercially converted into sugar, and in this way cellulose waste made to replace or supplement starchy foods for certain purposes.

Cellulose is the most prolific product of nature, and of this there can never be a shortage, since it is continually reproduced in almost inconceivable quantities and most of this ultimately goes to waste. For example, it is estimated that 20,000,000,000 lbs. of wood is wasted in Canada in connection with the timber industry alone, and in addition to this the amount of straw and other forms of cellulosic waste must be many times greater.

It is impossible to predict what might be accomplished in this field if sufficient properly directed research was applied, but even on the basis of yields which have been commercially demonstrated, our wood waste is apparently sufficient to produce 2,500,000,0000 lbs. of sugar. That this sugar, if produced, might be the equivalent of an equal weight of grain for making alcohol or even for feeding stock, looks reasonable. If we were destroying or wasting 40 or 50 million bushels of grain every year it would arouse national consternation, and yet this seems to be just about what we are doing in this case, without a thought as to the economic loss involved.

Future developments may even show that this amount of wood waste is equivalent to our annual production of wheat in potential value, should its theoretical conversion into sugar be accomplished.

In view of these facts and possibilities, does it not look as if the problem of wood hydrolysis, as its conversion into sugar is termed, represents the biggest fundamental proposition in the whole field of industrial research?

Canada, with its huge undeveloped area, produces cellulose in almost infinite quantity. We are, therefore, in an extremely favorable position to take the lead and gain the commercial and economic advantages which its use along these lines must bring, just as we are now doing in the case of pulp and paper.

The problems thus suggested and the possible results obtainable seem of such national and economic significance that it becomes a matter which should not be let entirely to private enterprise, but deserves to be taken properly in hand by the government and something commensurate with its present importance accomplished.

It is a remarkable thing that it still remains so difficult to impress non-technical government officials with a matter of this kind. Those who have been concerned with the industrial problems of our Forestry Department have been working to date under such a handicap that it has been difficult for them to impress the value of the work they might be doing upon higher officials. We need at Ottawa a strong group of technical men, who are not mere servants in the house of the government. The day has gone when national resources may be obliterated without some effort at replacement or full development. It would not then be out of order for either the Dominion Government alone, or working in conjunction with those provinces where the matter is of special importance, to undertake to demonstrate in a practical way that our great present wastage in wood might be profitably stopped. What clogs such action is a lack of conception and vision on the part of lumbermen, paper makers and the government. This development is on national importance and should be undertaken as a national measure in the interests of the public generally. Some day it will be done, but the time for action is past now, and every hour the waste goes on. Let us not only hand down to future generations a noble heritage of principles, but also a few things well done when they should have been done.

USE N.Y. FORESTS TO SUPPORT THE STATE.

New York, May 6.—"When Gov. Miller in his first annual message on Jan. 5 declared that a plan ought to be devised to utilize timber that is going to waste annually in the state forest and at the same time to use the forests to produce a substantial revenue for the state, he pointed the way to the practical conservation of this tremendously valuable resource," says Dr. Hugh P. Baker, Executive Secretary of the American Paper and Pulp Association.

"The forests, if used properly, will contribute an increasing share toward meeting the expense of government in this state and assist materially in reduction of its debt. It is unreasonable and uneconomic that the state should have nearly two million acres of land, much of it capable of giving direct returns to the state, and that without injuring its future productiveness or value, but rather increasing it, locked up by constitutional provision which actually does not let us use a bit of the timber for our industries or our people.

"Our great fundamental wealth producer, the soil, should not only give to the state all that we can get from it through agriculture, but that we should make the great empire of our forest land of over ten million acres so productive that it may assist in providing revenue as the forests of France, Germany and Scandinavia provide great revenues for those countries.

"Let the state take hold of its forests in the same businesslike way that it has taken hold of its agricultural lands. Make every tax payer learn the slogan, "Use our Forests Properly for the Support of the State."

Why not ask your minister to preach a Safety First sermon once a month? It is something that is badly needed in every community.

PULP AND PAPER INDUSTRY IN NEWFOUNDLAND.

Next in importance to the fisheries of Newfoundland is now the pulp and paper industry. The Anglo-Newfoundland Development Company's mills at Grand Falls have been maintaining an output of 215 tons of newsprint paper daily, with a surplus of mechanical pulp, and the smaller pulp mill at Bishop's Falls has been turning out 100 tons of the latter commodity daily in the same way. Logging operations for pulp wood were not actively prosecuted by either company in the winter of 1919-1920 because of the exceptional severity of the weather which blocked the railways, the highways and even the trails through country from January until April, making it difficult either for men to work or for supplies to be furnished them, consequently the former company used most of its reserve stock of logs, and has therefore had to make plans to operate on a largely increased scale this autumn and the coming winter. As this is written the company has 2,500 men "in the woods" and some 5,500 on its pay roll altogether, and is paying out $600,000 a month for labor. It is expected that a cut of 250,000 cords of pulp wood will be made during the next few months, of which about 50,000 will be held as a reserve, the rest being manufactured during 1921. The smaller company is planning on a proportionate cut, but the recent drop in the price of mechanical or ground-wood pulp of the United States may affect its operations. A Norwegian company is well advanced with the construction of pulp mills on the Gander river, the next big valley south of the Exploits, in which the former companies are located; but it is not likely to be ready for manufacturing before the end of next year, if then. Other projects for mills are more or less tentative at present, but may materialize during 1921.

The subsidiary industry of cutting and sawing logs for conversion into lumber, for export to a small extent, but mainly for local requirements, has been pursued at full capacity for most of the year by the 12 large and 480 small mills engaged, whose total output realized 225,000,000 feet, board measure, valued at about $1,500,000, and employing some 2,000 men for part of the year at least. A state of exceptional depression has come upon that industry during the autumn, causing a collapse in prices, with the result that in one extensive lumbering section, White Bayou, the North East Coast business people will not "supply" or make advances of food and other material to the settlers to enable them to engage in logging the coming winter for conversion into lumber next season, and there is already a state of grave destitution existing in that region. Elsewhere conditions are better, because the people combine lumbering with fishing to a larger extent, but inactivity in the lumbering industry is deemed altogether probable for next year. So serious, indeed, is the situation that the Government has agreed to temporarily suspend the operation of the law prohibiting the export of logs for pit props or pulp wood, so that those in distress may have an opportunity of securing a livelihood by cutting and shipping this material.

The growing magnitude of the pulp and paper industry for the past seven years can be seen by the following figures of export:—

	Pulp.		Paper.	
	Tons.	Value.	Tons.	Value.
1913-14	51,605	$372,676	40,077	$1,795,488
1914-15	48,451	379,220	40,556	1,817,193
1915-16	22,892	197,608	62,527	2,801,769
1916-17	27,413	351,072	33,389	1,510,440
1917-18	11,494	111,358	34,060	2,302,243
1918-19	71,151	475,178	21,819	1,545,244
1919-20	19,864	334,276	80,719	4,725,660

— Sir Patrick McGrath, in the Montreal Gazette.

ADVERSE TRADE BALANCE WITH U.S. IS LESS

By FREDERIC HUDD.

Canada's total trade with the United States during the month of February was $79,000,000, as against $104,000,000 for February of last year, a decrease of $25,000,000, according to the *Monthly Summary of Foreign Commerce* of the United States.

United States exports to Canada during February were $46,000,000, a decrease of $18,000,000.

United States imports from Canada in February were $33,000,000, a decrease of $7,000,000.

During the eight months ending February, 1921, Canada's total trade with the United States was $1,011,000,000, an increase of $106,000,000 compared with the eight months ending February, 1920.

United States exports to Canada in this period were $593,000,000, an increase of $46,000,000. United States exports to the United Kingdom decreased over $500,000,000, and to France $117,000,000. Thus, while the volume of United States exports to Canada continues to increase, United States exports to other principal countries show a striking decrease.

United States imports from Canada during the eight months ending February, 1921, were $418,000,000, an increase of $59,000,000. United States imports from the United Kingdom in this period decreased $77,000,000, and from France $12,000,000. United States imports from Germany increased nearly $45,000,000. Thus, while United States imports from Canada show a substantial increase, United States imports from other principal countries, with the exception of Germany, show a decrease.

Canada sold $38,000,000 more goods to the United States in the eight months ending February, 1921, than the whole of South America sold to the United States, and nearly double what the United Kingdom sold to that country.

Canada bought from the United States $154,000,000 more goods than the whole of South America bought from the United States and more than one-half the amount bought from that country by the United Kingdom.

The adverse balance of Canada's trade with the United States for the eight months ending February, 1921, was $175,000,000, as against an adverse balance for the corresponding period ending February, 1920, of $188,000,000 — a decrease of $13,000,000. The United Kingdom's adverse balance of trade with the United States decreased by $428,000,000 and France's adverse balance of trade by $107,000,000. Germany's adverse balance of trade with the United States increased $119,000,000. — Weekly Bulletin.

An ounce of prevention is worth a pound of cure, but it is just as well to be provided with both.

BROADSIDES — THE TRAIL BREAKERS OF BUSINESS.

The following is the text of a typical "broadside", sent out by the Canadian Pulp and Paper Association. It is effectively printed on buff cover paper in black and red across the two inside pages. Page one shows a trader on snowshoes, breaking a trail for his team of huskies and their loaded sledge:—

Vivid, glowing personality that grips the prospect's attention and holds it till the sales message is driven home — that is the first requisite of a successful broadside. Broadsides, are the trail breakers of business, blazing the way in new territories for bigger sales.

Like a salesman, the broadside must be dressed to fit the part it is to play. The copy should carry a straight man-to-man talk, spoken in a straightforward manner. When a "stunt" is used on the outside fold to get the prospect's attention, it should bear some direct relation to the copy. Otherwise, the man who receives it may feel that he has been inveigled into reading the broadside under false pretences, and thus a sale is lost.

The type should fit the spirit of the copy. Above all things, it must be easy to read. Odd layouts that puzzle the reader's eye and distract his attention from the copy are out of place in a broadside.

Size? Large enough to carry the sales message, small enough to be easily handled. A broadside so large that it resembles a newspaper is very apt to be a costly failure. Remember — a broadside is intended to be read at a man's desk; it is *not* a ten-sheet poster.

Mailed without an envelope, broadsides must be made of stock sufficiently strong easily to endure the sometimes rough handling of the post. A torn broadside stands as much chance of making a sale as a slovenly salesman.

When no half-tone cuts are used, good cover stock makes an ideal broadside. The wide range of colors, weights and prices of Canadian cover stocks makes it easily possible for the printer to select a stock to fit the job.

The next time you have a broadside to print, look over the sample books of dealers in Canadian-made cover stocks. They're brimful of good suggestions, not only for the stock itself, but for the striking color combinations that will increase the effectiveness of the broadside. These sample books are veritable gold mines of profitable ideas. Form the habit of using them.

Broadsides printed on Canadian-made stock build more business for your customers. And that means more business for you.

Help to bring Canadian dollars back to par by advertising Canadian goods on Canadian paper.

INCREASE IS $180,000.

The total turnover of the book and publishing committee of the Methodist Church, which controls the Methodist Book Room and the printing of the various Methodist publications, has increased $180,000 over the turnover of last year, according to the report submitted at a meeting of the committee yesterday. The total amount of business done during the year was nearly $1,500,000. Although the turnover was larger the net profits decreased and were less than half as large as they were last year.

T. A. P. P. I. ACTIVITIES.

The Technical Association of the Pulp and Paper Industry has a Bureau, at 542 Fifth Ave., New York, for information concerning vacant positions in the engineering and chemical departments of mills, and less frequently by employers for applicants for positions. Among applicants for positions there are special inquiries on file at present, as for instance, from a research chemist in sulphite work, an engineer in mill construction and papermaking, chemist versed in paper tinting, and a book and newsmill superintendent. Mills seeking technical men and technical men seeking positions should make freer use of the Technical Association's facilities for supplying the needs of the industry in employment matters.

Plans for Dyestuffs Investigation.

Ross Campbell, Department of Technical Control, American Writing Paper Company, Holyoke, Mass., has been named by the President to succeed Dr. Otto Kress, as chairman of the Committee on Dyestuffs. One of the first tasks of this committee will be to check up the chapter on dyestuffs in the vocational education textbook. The Dyestuffs Committee has some ambitious plans for reporting on the performance of different dyestuffs under different conditions, their peculiarities, different combinations in which special dyestuffs should or should not be used. etc. But the carrying out of these plans depends on the co-operation that can be obtained from the members generally and in particular from the companies by which members are employed. If the mills are willing to release certain data, the committee can act as a clearing house and supply complete information on available paper colors to the whole industry. Mr. Campbell's associates on the Dyestuffs Committee comprise: Charles G. Bright, Kimberly-Clark Company, Neenah, Wis.; Clarke Marion, Champion Coated Paper Company, Hamilton, Ohio; Kenneth T. King, E. I. du Pont de Nemours & Company, 1114 Tribune Building, Chicago, Ill.; Clark C. Heritage, National Aniline & Chemical Company, Buffalo, N.Y.; Carl C. Schneider, Knowlton Bros., Waterton, N.Y.

GOODBYE, CARELESS WORKMAN.

The day is fast approaching when a careless workman will be unable to find a steady position, if any position at all, for he will find that every employer is demanding that every workman be a progressive Safety man. Your scars and missing fingers, glass eyes and wooden legs will no longer be your mark of recommendation, as of yesterday, but instead will be an indication of carelessness and with only an occasional exception denote an inferior class of workman.

There is but one solution for you. You will be put through the sorting table, and if you do not measure up to the safety standards you will have to go. Perhaps you will ask what are the safety standards. The safety standards are; Thinking, co-operation, better judgment, honest day's labor and a constant thought of safety first and putting such thoughts into action.

Mr. Workman, it's up to you. If you weaken you are bound to go under, so buckle up, show your boss that you can think, and that you will co-operate in every respect. Don't take chances, don't watch the clock, produce in an efficient manner, work with the confidence that "I can do it," for confidence is the foundation of success. Remember—The brand of "Safety First" represents efficiency.

C. A. M. in "Common Sense."

Technical Section

REVIEW OF RECENT LITERATURE.

E-2; K-10. Sizing Substance from Sulphite Waste Liquor. Ger. patent No. 307,663, FELDMUHLE PAPIER und ZELLSTOFFWORKS A.-G., Berlin, Jan. 27, 1913. (Addition to Ger. patent No. 307,087) **J. Soc. Chem. Ind.**, xxxix, 16A, (Jan. 15, 1920). The liquor containing the ligninsulphonic acids is poured into a hot concentrated solution of caustic alkali and the mixture heated until the action is complete. The reaction is quicker, more certain and more convenient in operation in this way than if the alkali solution is added to the sulphite liquor. The lignin substances are separated from the resulting solution by treatment with acid, and redissolved in alkali for use in paper-sizing.—A. P.-C.

F-2. Dry Distillation of Pulp Waste Liquors with Strong Bases in Presence of Steam. Br. patent No. 120,724, E. L. RINMAN, Djarsholm, Sweden, Oct. 30, 1918. **J. Soc. Chem. Ind.**, xxxix, 15A (Jan. 15, 1920). Waste liquor from the manufacture of pulp from wood, straw, or other materials by the soda process, waste liquors produced by boiling vegetable matters with NaOH until the cellulose is dissolved or waste liquors from sulphite pulp manufactured, after boiling with CaO, are mixed with suitable proportions of NaOH and CaO, the mixture is concentrated by evaporation until it contains about 25 per cent of water and then subjected to destructive distillation, preferably by means of hot gases in the presence of superheated steam. The temperature is maintained below 200° Cent. until the water has been substantially driven off, then between 200 and 300° Cent. until NH_3 was, and NaOH have distilled over, and, lastly, between 300 and 500° Cent. during the formation of acetone and, later, of light oils and heavy oils. The proportions of bases to be added per 100 parts of organic matter range between 40 and 65 parts of Na_2O and between 30 and 40 parts of CaO.—A. P.-C.

K-6. Cleaning Material from Waste Paper. Ger. patent No. 303,302, REIS UND COMPANY, Friedrichsfeld, May 26, 1917. **J. Soc. Chem. Ind.**, xxxix, 15A (Jan. 15, 1920). Waste from paper industries, more particularly from paper spinning and weaving, is softened and made absorbent by treatment with alkalis, inorganic or organic acids, N_2SO_3, or chlorine compounds, and then bleached and worked up into "cleaning waste" in the usual manner.—A. P.-C.

L-6. Fibrous compositions. Br. patent 143,258—1919, E. E. MOUGEON, Monteux, France, July 21, 1920. Chem. Met. Eng., **23**, 752, (Oct. 13, 1920). Vegetable fibers are mixed with casein in the form of a paste and the mixt. is molded under press. and heat. In an example, fibers are immersed in a bath containing 1 kg. of casein paste consisting of 88% casein and 12% ammonia to 15 l. of water. The fibers are drained, placed in molds, compressed, and heated to abt. 130°C to drive off the water and ammonia. CaO, $MgCO_3$, $Na_2B_4O_7$, etc., may replace the ammonia. Articles may be ornamented by coating them with sawdust before molding.—A. P.-C.

L-7. Artificial filaments and fabrics. Br. patent No. 143,253—1919, L. DRUT, Villeurbanne, France, July 21, 1920. Chem. Met. Eng., **23**, 752, (Oct. 13, 1920). An artificial textile fabric is made from filaments prepd. from solns. of, for example, viscose, cuprammonia cellulose, gelatine or cellulose acetate, and in which are incorporated bubbles of air or inert gas; fabrics manufd. of such hollow filaments are very light, opaque, and soft to the touch.—A. P.-C.

L-7. Strengthening Paper Yarn. Ger. patent No. 302,551. O. RUFF, Breslau, Germany, July 6, 1917. **J. Soc. Chem. Ind.**, xxxix, 15A (Jan. 15, 1920). The paper, before spinning, is soaked in a previously heated solution of crude cresol, formaldehyde and some alkali, either in the spinning machine or in a separate process. A larger proportion of alkali is required for sulphite pulp than for sulphate pulp. After spinning, the yarn and the material woven therefrom is heated for some time at 80° Cent.—A. P.-C.

L-0. Acetic Acid from Cellulose. Br. patent No. 134,265, POWER GAS CORP., Ltd., and H. LANGWELL, Stockton-on-Tees, Oct. 1, 1918. **J. Soc. Chem. Ind.**, xxxix, 38A (Jan. 15, 1920). A mash of cellulose material, such as sulphite pulp, or straw, is inoculated with fermenting vegetable matter e.g., stable manure, and maintained under aerobic conditions at a temperature between 25 and 60° Cent. The cellulose undergoes acetic fermentation, and $CaCO_3$ or other suitable substance is added to neutralize the acid as it is produced. The mash must contain nutrient salts and nitrogenous matter, and some sugar or other readily fermentable substance may be added to induce a vigorous fermentation at the commencement. The temperature employed, within the limits stated above, influences the rate of fermentation, but not the yield of acid.—A. P.-C.

L-0. The Preparation and Analysis of Cattle Food Consisting of Hydrolyzed Sawdust. E. C. SHERRARD and C. W. BLANCEO, Forest Products Laboratory, Madison, Wis. **J. Ind. & Eng. Chem.**, xiii, 61-5 (Jan. 1921). Eastern white pine sawdust, representative of the waste mills cutting the species, was obtained from a mill in Minnesota. No effort was made to remove the bark or other foreign substances ordinarily present in this material. The sawdust was treated in the same manner as for the production of ethyl alcohol from wood; i.e., it was digested with 1.8 per cent sulphuric acid for 15 to 20 minutes under a steam pressure of about 120 lb. per sq. in. Sufficient water was added along with the sawdust to raise the ratio of water to dry wood to about 1.251. After the steam pressure had been blown off to the atmospheric pressure, the treated sawdust was removed from the digester, and a large portion of the acid liquor removed by means of the centrifuge. The centrifuged material was extracted with hot water to remove the remainder of the acids and sugars, the leach water was added to the centrifuged liquor and the whole almost neutralized with calcium carbonate. After separating the sludge the liquor was evaporated under reduced pressure to the consistence of a thick syrup. The leached material was screened through a 6-mesh screen the screenings dried, mixed mith sirup and the whole dried to about 12 percent moisture. Leaching experiments carried

Sample	Moisture	Solubility of sample in Cold Water	Hot Water	Ether	1% NaOH	Acetic Acid	Pentosan	Methyl Pentosan	Cellulose	Pentosan in Cellulose	Methyl Pentosan in Cellulose	Lignin	Crude Fiber	Reducing Sugars	Ash
Unhydrolyzed dust 80-100 mesh	6.00	8.81	10.23	4.13	23.16	....	....	....	56.16	....	....	31.45	....	....	0.82
	....	....	.....	....	.....	1.38	9.40	2.37	57.07	8.00	1.65	30.65	63.87	None	....
	6.46	8.70	10.08	4.11	22.86	....	....	....	.....	....	....	.....	.....	....	0.80
Average	6.23	8.75	10.15	4.12	23.01	....	....	....	56.61	....	....	.....	.....	....	0.81
Unhydrolyzed dust through 100 mesh	6.38	9.21	10.78	4.88	25.39	....	....	....	53.76	....	....	32.15	.....	....	1.52
	....	....	.....	....	.....	0.91[1]	9.86	2.83	54.45	....	....	30.50	60.81	None	....
	6.39	9.23	10.95	4.84	25.76	....	....	....	.....	....	....	.....	.....	....	1.50
Average	6.39	9.22	10.87	4.86	25.57	....	....	....	54.11	....	....	.....	.....	....	1.51
Unground wood meal through 100 mesh	4.15	30.17	30.64	3.94	43.24	....	....	....	36.01	....	....	37.21	.....	....	4.94
	....	.....	.....	....	.....	0.78	4.38	2.15	35.97	....	....	29.62	46.88	17.47	....
	4.09	30.59	30.69	3.77	42.59	....	....	....	.....	....	....	.....	.....	.....	4.92
Average	4.12	30.38	30.66	3.85	42.92	....	....	....	35.99	....	....	.....	.....	.....	4.93
Ground wood meal through 100 mesh	3.64	31.11	28.23	3.80	40.23	....	....	....	37.77	....	....	39.36	.....	.....	3.35
	....	.....	.....	....	.....	0.65	4.66	2.50	38.03	....	....	31.46	49.31	16.20	....
	4.11	27.55	28.39	4.06	39.04	....	....	....	.....	....	....	.....	.....	.....	3.27
Average	3.88	29.33	28.31	3.93	39.64	....	....	....	37.90	....	....	.....	.....	.....	3.31
Ground wood meal through 80-100 mesh	5.38	.....	.....	....	.....	....	....	....	37.46	....	....	.....	.....	.....	....
	....	.....	.....	....	.....	....	....	....	37.23	....	....	.....	.....	.....	....
	....	.....	.....	....	.....	....	....	....	.....	2.83	3.83	.....	.....	.....	....
Average	....	.....	.....	....	.....	....	....	....	.....	....	....	.....	.....	.....	....

[1] This value is undoubtedly somewhat low since the condenser was accidentally removed before the flask had sufficiently cooled.

Attention is directed to the changes resulting from the treatment. The cellulose obtained from the digested wood differs from the original wood in its behavior towards alkali. In the former practically all of the cellulose is converted into a viscous semi-transparent mass by 17.5% sodium hydroxide, while in the latter over 50% is unaffected. A.P.-C.

out on the digested dust indicated that five complete washings with a quantity of water equivalent to the weight of the wood are necessary to remove the sulphuric acid. The sugars are found to leach with somewhat more difficulty than the acid. It is pointed out that the sugars contained in the moist product are not appreciably affected by drying at temperatures ranging from 75 to 80° Cent. While some decrease is noted in total reducing sugars, the loss is apparently due to the removal of volatile reducing substances. The analysis of the wood meal and of the untreated pine sawdust is shown on the accompanying table.

R-1. Pulp and paper industry in New Brunswick. COLIN McKAY. Paper, 22, (Oct. 6, 1920). A brief description of the conditions under which pulp and paper mills can be established in N. B. and of the special inducements offered by the provincial govt. to attract capital.—A.P.-C.

R-11. Vocational training in the paper trade.—J. C. WRIGHT. **Paper Trade J.**, lxxii, 3 (Jan. 13, 1921); 4 (Jan. 20, 1921); 5 (Jan. 27, 1921); 6 (Feb. 3, 1921); 7 (Feb. 10, 1921).—Plans for specific vocational training, drawn up by Mr. Wright, the assistant director of the Federal Board of Vocational Education, after a survey of the pulp and paper industry. The data collected indicates that the greatest need is for foreman training and for trade training on the basis of both the preparation of workers for promotion and the technical improvement in certain occupations. The report is too voluminous to be abstracted.—C.J.W.

R-12. The cost system of Dill & Collins Co. JOHN B. HIPWELL, DILL & COLLINS, Co. Paper, 12-3, 32, (Oct. 6, 1920). A description of the conditions before the installation of the system, of the details of the accting. system, of the manner in which it was put in, and of the results secured from its use.—A.P.-C.

R-12. The human factor in cost accounting. F. H. FIGSBY. **U. S. Paper Maker**, lxiii, 3 (Jan. 1, 1921). Emphasizes the importance of the man responsible for the assembling and coordinating cost data for the guidance of the management in the control of business. C.J.W.

R-12. Standard classification of expense.—U. S. Paper Maker, lxiii, 3 (Dec. 15, 1920).—Report of the cost committee of the National Paper Trade Association, and a letter from Ernst & Ernst regarding the new system being considered by American paper merchants.—C.J.W.

R-13. Fifth Convention of the Cost Association of the Paper Industry, New York, Sept. 27, 28, 1920. Paper, 9-11, 24,26, 38, (Oct. 6, 1920). A brief acct. of the meeting, giving retiring president Burchell's address in full and abstracts of the other speeches and papers presented.—A.P.-C.

R-13. T.A.P.P.I. Convention, Saratoga Springs: Sept. 1-3, 1920. Chem. Met. Eng., **23**, 508-10, (Sept. 15, 14, 1920); Paper, 9-13, 28, 30, (Sept. 8, 1920), Pulp & Paper **18**, 967-70, (Sept. 16, 1920); 1028-9, (Sept. 30, 1920), 1044, (Oct. 7, 1920). Account of the meeting, including a description of the visits to the pulp and paper mills and other plants allied to the paper ind., social features, abstracts of speeches, and reports of the Executive, Bibliography, Sulfite Pulp, Heat, Light, and Power, Paper Testing, Soda Pulp, Standard Methods of Testing Materials, and Vocational Education Committees.—A.P.-C.

R-13. Meeting of the Northern New York Division of the American Pulp & Paper Mill Superintendents' Association, Glens Falls, Sept. 15, 1920. Paper, 9-10, (Sept. 22, 1920). A brief acct. of the meeting.—A.P.-C.

204,319; The method of drying sheet material consisting in feeding it into and out of a vacuum chamber without breaking the vacuum and subjecting the sheet material while in the vacuum chamber and under substantially little or no tension to the action of one or more electric heating coils. Claims allowed 34.—A. P.-C.

A village girl eloped in her father's clothes. And the next day the local paper came out with an account of the elopement headed:

Flees in Father's Pants.

Note.—The Spanish River News does not specify that father behaved like the Old Scratch.

PULP AND PAPER NEWS

In conjunction with the Ontario Associated Boards of Trade and Chambers of Commerce, the Toronto Board of Trade has arranged a trip to New Ontario for the merchants and business men of Old Ontario. The trip will be made by special train leaving Toronto on the evening of June 12 and will extend over six days. All of the pulp and paper companies' mills and the various mines in the north country will be visited.

The Ontario Government forestry department, under Mr. E. J. Zavitz, intend to carry out extensive plans along provincial forestry lines this summer. During the war comparatively little advantage had been taken by Ontario municipalities of Government encouragement along that line but this year it is hoped that real progress will be made. Seven million seedlings, mostly pine and spruce, with some hard woods, will be set out in the Forestry Department's Norfolk county reservation from which it is expected to get a fifty per cent yield. It is also contemplated to open two new nursery centres in Eastern Ontario. Simcoe County, with its many miles of waste land, is said to be one of the sections of the province upon which the department has taken up the Government's forestry proposition.

Among the recent incorporations by the Ontario Provincial Secretary's Department are the following: The New Idea Publishing Company, Limited, the Gould Baird Poster Co., Limited, and Print-Craft, Limited. All are authorized to engage in the printing and publishing business, with allied branches.

A late despatch from New York says: Seven large paper mills in the United States and Canada, employing approximately 9,000 men, shut down today because of failure of workers and owners to sign new agreements to replace those which expired last night. According to reports received here by the Labor Bureau, Inc., the mills which closed Wednesday were: Union Bag and Paper Company, Hudson Falls, N.Y.; Sheboygan, Wisconsin and Kaukauna, Wis.; St. Maurice Paper Company, Ltd., Three Rivers, Que.; Anglo-Newfoundland Company, Grand Falls, Nfld.; Abitibi, Ltd., Iroquois Falls, Ont; Espanola, Ontario and Sturgeon Falls, Ont.; St. Regis Paper Company, Deferiet, N.Y.; Hanna Paper Company, Norwood, Norfolk, and Raymondville, N.Y.

Only two paper mills in northern New York are working today as a result of a walkout this morning of 1,100 union men, employed by the St. Regis, Hanna Paper Corporation and other plants. The men refuse to accept a 30 per cent cut.

The Sherman Paper Company at Felts Mills and the Degrasse Company plant at Pyrites are not affected, having arrived at settlements with their employees.

The Rudd Paper Box Company, Richmond Street, Toronto, will have an exhibit of folding and set-up boxes at the convention of Confectionery, Biscuit and Chocolate Industries of Canada, to be held at the King Edward Hotel on May 17th and 18th. The firm is just now, and has been for some little time, carrying on an energetic Made-in-Canada direct mail advertising campaign, one of the features of which was the mailing to all egg and butter packers in the province a sample of the firm's cartons adapted to the egg and butter business. Enclosed with the samples are circulars containing hints on "How can we help you to sell more butter" and "How can we help you deliver your eggs without breakage."

The Mattagami Pulp and Paper Company, Limited, at Smooth Rock Falls, Ont., have just completed a big wood drive which comprised 160,000 cords, the wood having been successfully assembled at the company's mills. The company's programme of work and improvements has been pretty well rounded out now, which includes improvements to plant as well as the making of a model townsite.

We comment editorially this week on the circular letter to the shareholders of the Riordon Company, Ltd., dated the 6th instant, and signed by the five gentlemen, who were recently appointed a committee of directors to examine into the affairs of the Company and report on its financial position and requirements. With this letter were enclosed to the shareholders the balance sheets of the Riordon Company, Ltd., and its affiliated companies, the Gatineau Company, Ltd., and the Ticonderoga Pulp and Paper Company. The letter points out that the soundness and value of the Company's business are unquestioned; that its physical assets are among the most valuable of raw material resources of Canada; that its very large earning power has been demonstrated for many years past. The letter further intimates that a policy of rigid economy in operations and discontinuance of construction as far as possible is being instituted. This, also, is all to the good, if as the letter further states, the position of the company which it describes as "serious," is "due to commitments for construction and other expenditures having been undertaken before adequate financial arrangements were made," as well as to the world-wide reaction in general trade conditions. Finally the letter strikes an emphatic note of warning, to which, it would seem, the shareholders, in their own interests, would do well to give much weight and immediate heed. It states that unless $5,500,000 is raised by the first of next month, the Company will be unable to carry on business. It is now up to the shareholders to subscribe for the bonds —the issue of $5,000.000 ten year eight per cent, Mortgage and Collateral bonds of the Riordon Company, Ltd.—from the subscriptions to which, together with the amount to be received from the sale of the First Mortgage bonds which the Company is negotiating, the Company requires to be assured of this sum of $5,500,000, if they wish that the business shall be carried on.

Production of groundwood pulp has begun at the new plant of the Fort William Paper Co. at Fort William. Operations are to be extended until the capacity production of 120 tons of groundwood pulp per day is reached. Later on, a paper machine will be installed to carry the products to that further degree. A ready market is found for the pulp in nearby parts of the United States, where it is made into finished paper. The pulp mill was completed and put into operation ahead of schedule, it not having been expected to be ready before the early part of June.

Among out-of-town visitors to Montreal during the past week were the following: Mr. John F. Taylor, sales manager of the E. B. Eddy Company, Ltd., Messrs. Lauren H. Gardner and C. V. Tyrell, president and vice-president of the Garden City Paper Mills Company, Ltd., Mr. George Carruthers, president of the Interlake Tissue Mills, Ltd., and chairman of the Technical section of the Canadian Pulp and Paper Association, and Col. W. E. Haskell, vice-president of the International Paper Company, Ltd.

Through the invitations of some of the mills in the St. Maurice Valley, the meeting of the Technical Section of the Canadian Pulp and Paper Association will, this year, be one of the visits to the St. Maurice Valley which will take in all the mills in that district. The date of the meeting has not yet been definitely decided on, but it will probably be about the middle of June.

From information which reaches us it appears that the very unfair duty on newsprint imported into the United States, for the proposal of which the Fordney Bill was responsible, will be dropped. It may be pointed out that this duty, as originally proposed, was to be at the rate of $15 a ton. But it was to be foregone in the case of Canada, provided this country did not enact what might be considered in the United States an unfair legislation. In other words, this duty was probably to be used as a lever wherewith to induce Canada to permit more freely of the exportation of pulpwood in unmanufactured form. However, we now gather, as mentioned above, that this proposal is to be dropped. In any event, it is worth pointing out that, had the suggested duty been imposed, the United States would, very largely, have been taxing its own capital, seeing that a large number of paper mills in Canada were built by American capital. If, as now seems likely, the proposal is to be dropped, this result will probably be due, in a great measure, to the brief submitted by Mr. S. E. Thomason, on behalf of the American Newspaper Publishers' Association. Mr. Thomason, in answer to a question as to why European newsprint should be allowed to come into the United States, said that, in normal times, the importation of European newsprint could not hurt the American or Canadian industry, as many who had once used it would not use it again at any price.

The Underwood Resolution, which was again introduced on the 25th April by Senator Underwood, has been referred to the Committee on Rules. The original Resolution called for a report to be made to Congress without naming a special time within which it should be made. But now a Report has to be made to the President on or before the 1st December next.

Last week, reference was made to the admirable circular letter sent out recently by the Canadian Pulp and Paper Association to some 4,000 Canadian manufacturers, urging the use of 'Made-in-Canada' paper. Replies from manufacturers to this letter continue to come in, and in highly gratifying numbers. Of those who have so far replied, by far the greater number state that they are already buying and using Canadian-made paper. Others, apparently, have bought foreign-made paper for so long, and are either so satisfied with it, or else have regarded it as so unimportant a matter, that they did not realize the underlying importance of the principle involved until it was brought to their notice by the letter in question. It may be anticipated that they will now give the same preference to Canadian-made paper that they urge others to give to the commodities which they themselves manufacture. But there are a certain number of manufacturers who have not been able to get their paper requirements filled in Canada. These requirements are nearly all for specialties: for example, fancy wrappings, fancy box papers, very fine tissue papers, and certain kinds of Bristol boards. Now that the demand for such papers has been shown to exist, Canadian paper manufacturers can be relied on to meet it in such a way that, in a short time, there will be no need for any Canadian business men to go outside Canada for any sort of paper at all, except possibly for small lots of very special lines.

It is estimated that between a thousand and fifteen hundred tons of pulpwood were destroyed at East Angus plant of the Brompton Pulp and Paper Co., by fire last Thursday night. The weather in this district has been unusually dry for several days and fanned by a slight breeze the flames had made considerable headway before being discovered.

The International Paper Co. has bought the ocean-going steel steam yacht "Speedy," which is now at Montreal, to facilitate visits to the company's Canadian properties.

The small hydroplane operated by the Laurentide Co. struck a hole in the air and soon after struck a tree. Although injuries to two of the occupants were serious they are on the road to recovery. The pilot and mechanician are experienced men and will not let this incident dampen their enthusiasm for the possibilities of forest mapping and fire inspection from aloft.

The ladies of Iroquois Falls have organized an Athletic Association. That town is a great place for outdoor sport.

The Brompton Club at East Angus is a commodious building, but it was too small for the crowd at the smoker held a few nights ago.

Mr. Garrett, who was recently with the Forest Products Laboratory, has joined the staff of the laboratory of the Belgo-Canadian Pulp and Paper Co.

CANADIAN ASSOCIATED PRESS TO BE WOUND UP.

At a meeting of the Canadian Associated Press yesterday it was unanimously decided to take the necessary steps to wind up the company.

Mr. Stewart Lyon moved a vote of thanks to Mr. Irving E. Robertson, president, for his services. In seconding the motion, Mr. C..F. Crandall, of Montreal, said they had hoped that the C.A.P. instead of vanishing from the field would have coalesced with the Canadian Press., Limited, and thus have carried on the fine tradition of public service established by the C.A.P., and thus perpetuate the memory of the great Canadian journalist, John Ross Robertson, who was the founder of the organization in 1904.

POWELL RIVER COMPANY BUYS TIMBER.

The consummation of a deal whereby the Powell River Company will secure nearly 5,000,000,000 feet of timber on the Queen Charlotte Islands, B.C., is now practically completed. The major portion of this timber is spruce and hemlock, which will be used in the company's pulp and paper plant. It is estimated that with proper care this timber will give a fifty-year cut under normal conditions. News Despatch.

UNITED STATES NOTES

While printers in job printing establishments throughout the country are either out on strike or bickering over the question of a forty-four instead of a forty-eight hour week, the printers employed in the Robert Gair Company's lithographing and job printing departments have voluntarily decided to work fifty-four hours a week instead of forty-eight without a cent's increase in pay. Between 500 and 600 employees are affected by this decision. Commenting on this action by his employees, Robert Gair, founder of the company, which ranks as one of the largest paper products establishments in the country, has this to say: "The men have gone to work fifty-four hours a week, with no increase in pay, in order to keep the wheels turning. There is not a union man in the shop from top to bottom and there never has been a union man there since I started the establishment sixty years ago." Referring to the union printers the country over who are balking on the demand that they work forty-eight hours a week, Mr. Gair, said: "Those men and all men like them are fighting a losing battle, and the sooner they come to realize it the better off this country will be. Increased production is the only salvation for employers and workers alike."

That the men in commercial printing lines are coming to see conditions in the light pictured by Mr. Gair is evident in reports indicating that local unions in various parts of the country, which called strikes a week ago to enforce the forty-four hour demand, were quick to patch up agreements. Between 4,000 and 5,000 men went out in Chicago while about 1,500 are still out in New York State, and none are out in other cities. The Employing Printers League of Chicago averted a general walkout by accepting the demand, though they say the matter of a wage cut is still to be considered. Early settlements are expected in many localities because of the lead taken by the unions in New York, Chicago, Indianapolis and other leading centers. The four major printing crafts in Chicago were among the first to come to terms. A wage reduction approximating $4.35 a week was accepted by the unions after differences, were placed before an arbitration board. The scale agreed upon applies to a week fixed at forty-eight hours.

With the strike of paper makers—called May 1 for some mills by the international unions when the latter refused to accede to wage cuts—still in progress, reports from various centers indicate a disposition on the part of labor not directly involved to come to satisfactory understandings regarding downward revisions of wages. The Kimberly-Clark Company, Neenah, Wis., the Thilmany Pulp and Paper Company, Kaukauna, Wis., and the Appleton Coated Paper Company, Appleton, have put into effect wage reductions of from 15 to 20 per cent. In proposing the cuts to their employees the Kimberley-Clark Company presented figures to show that it was practically impossible to continue operating so long as the high wage scale remained in effect, inasmuch as the price of the company's product is being reduced.

Wage reductions of 20 per cent became effective May 1 in the plants of the Crown Williamette Paper Co. at Camas, Washington, and Oregon City, and in the plant of the Hawley Pulp and Paper Company at Oregon City. All skilled and unskilled labor is affected, and it is said to have accepted the cut without any demonstration. Until May 1, $4.32 had been paid for an eight hour day, the cut brings the daily wage to $3.46. It was said further reductions are contemplated if the wage schedules in Eastern plants go lower.

The unions involved in the international strike called against concerns that are parties to the general agreements which expired May 1, and May 11, were elated by an announcement stating that the Grand Lake Bag Company of Woodland, Me. had agreed to operate its plant at the present scale of wages for another year. Several of the smaller concerns in New York State are also said to have decided to continue the present scale. These include the Nuera Company at Hadley, N.Y., and the Schroon River Company at Warrensburg. Union officials also claim that the Great Northern Paper Company has renewed the present contract with their union employees. They quote Manager William A. Whitcomb of the Great Northern Company as follows: "We agreed with our men that living conditions have not changed sufficiently to warrant any reduction in wages or a change in the working conditions of the men, so we shall continue for the next year paying the same wages as we have paid during the past year."

A bill proposing control of forest devastation has been introduced in the United States Senate by Senator Arthur Capper of Kansas. The measure follows closely the program of the National Conservation Association of which Gifford Pinchot is president, and it has the indorsement of that organization. It places control over forest devastation with the secretary of agriculture and the forest service, working in conjunction with advisory boards from the lumber and wood using industries. It provides for decentralization of administration by throwing the execution of the act into the field, thus assuring a local and democratic control.

While most paper companies in Wisconsin have succeeded in cutting wages as much as 20 per cent without encountering serious opposition from their employees, the Northern Paper Mills, Green Bay, Wis., is having great difficulty in settling a strike begun some time ago by its workers when they refused to accept a reduction of 17 per cent. Outbreaks and riots have obstructed the efforts of the company to operate despite the strike, and the courts have been resorted to several times to enjoin and restrain picketers.

Congress has under consideration resolutions proposing the appointment of a commission to take up the pulpwood situation with Canada. The resolutions are exactly similar to the one drawn up at the last session of Congress by Senator Underwood, which was vetoed by President Wilson.

The bill providing for water power development in New York State under State control by private capital, was signed last week by Governor Miller. The measure creates a water power commission, consisting of several of the State's executive officials. This body is to investigate water power resources and sites and the cost of economically developing them. Licenses are to be issued for its development, and the rates and regulation of the companies are to be under the control of the State Public Service Commission.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, May 7. — A number of paper lines sagged to lower price levels during the past week. The price lists of bonds, books, writing papers and parchment papers all underwent a downward revision, the reduction representing in some cases from ten to fifteen per cent. Whether these further reductions will result in increased business remains to be seen. Hitherto the experience of most mills and jobbers has been that price reductions have not materially stimulated business, but it appears to be a settled policy to bring prices down by gradual steps to conform with the new conditions that prevail in the trade. Business, for the most part, continues dull although there are signs of a brightening up in some lines. Trade in paper fluctuates these days with a few days of fairly good business being alternated by small sales. Generally, the paper dealers are complaining of very dull times.

PULP.—Although the pulp market is down to a rather low level some of the mills report a slight picking up in trade. Most of the American mills are closed down, but when the settlement of the wage question across the line comes, and the mills resume operations, the Canadian pulp manufacturers look for good business. Stocks in the hands of the consuming mills are gradually becoming depleted. The representative of one of the big mills told the Pulp and Paper Magazine this week that, based on normal times, the present supply of pulp on hand at the mills would last from eight to ten days. According to the gentleman quoted so many of the mills across the line have been down that stocks have not accumulated to as great an extent as a good many people imagined. "The real trouble in the pulp and paper industry, as well as other industries," he said, "is that the producing end of a lot of industries made enormous cuts to meet the altered conditions but these have not yet been passed on to the consumer. He is still paying an exorbitant price when the cost of raw materials is considered. While this applies to commodities as a whole it is particularly applicable to the paper industry."

While comparatively few transactions in the pulp trade are taking place, groundwood still hovers around the $40 mark. Bleached sulphite is quoted at from 6c to 6½c and high grade easy bleaching is bringing from 4½c to 4¾c per pound.

BOOK AND BOND PAPERS. — Radical reductions in prices of book papers and bonds went into effect last week and it is generally understood that the new prices represent rock bottom. In any event the new list is certain to prevail for some time to come if prices have not already reached the minimum. The somewhat extraordinary spread of prices during the present year is illustrated in the case of white sulphite bond, which, during the past five months has dropped from 23½ cents to 15 cents per pound. It is believed that the purpose of the present drastic cut by the manufacturer is to remove any doubt as to the future and permit of a restoration of confidence in the market, while it should also have the effect of off-setting price-cutting which has been all too prevalent in the jobbing trade of late. The present reductions represent over fifteen per cent from that list, in some cases. White sulphite bonds have been reduced from 18 cents to 15 cents per pound; tints from 19 cents to 16 cents and colored from 20½ cents to 17½ cents, f.o.b. mill, not packed. No. 1 rag is now quoted at 36 cents; No. 2 at 28 cents and No. 3 at 25½ cents. In book papers No. 1 M.F., is now selling at 12 cents; No. 2 at 11 cents and No. 3 at 10 cents, with half a cent added to these prices for S.C. book.

WRITING PAPERS. — Writing papers also have undergone a considerable reduction in price, representing about a ten per cent drop. Cheap grades of this line are now quoted at 13¼ cents ton lots at the mill and the better grade runs at 16½ cents.

WRAPPING PAPERS. — Orders for this line continue small in volume, although the trade is fluctuating somewhat with a slight tendency towards better business. On the whole, however, there has been little improvement and dealers are complaining of the lack of business. It is not thought in the trade that prices in the wrapping paper line have reached rock bottom and the recent reductions in the lists, it appears, have not stimulated trade to any extent.

PAPER BAGS. — The paper bag industry is undergoing a very quiet period and very little business is moving. It is estimated by one leading manufacturer that the consumption of paper bags has fallen off at least a third since the thriving times of the war period. This appears to be accounted for by the large decrease in the amount of money in circulation, due, in a measure to unemployment. During the war years, and for a short time after, merchants using paper bags turned over a lot of stuff, but with the return of the survivors from the overseas conflict hard times followed and there was a big drop in the amount of money available for purchases at the grocery and other shops. As a consequence there has been a big decrease in consumption in the paper bag industry and manufacturers do not look for improvement in business for some time to come. Prices have dropped three times since the beginning of the year, a ten per cent reduction coming into effect about three weeks ago. During the past six months prices have declined as much as twenty-five per cent and they do not appear to have touched rock bottom yet.

PAPER BOX INDUSTRY. — Trade in the paper box industry is quiet although some good-sized orders have been secured by some of the manufacturers. General complaint is heard that paper box users, despite the fact that prices are now lower than they have been in a long while, both in the finished boxes and boards, are delaying the placing of orders for their requirements which is placing the manufacturers under a heavy handicap. The orders for boxes that are coming in are for quick delivery and the box manufacturer cannot always get his board on short notice, with the result that many orders are delayed in delivery. With the present low price of chip and other boards which, of course, has sent boxes down, it would appear to be an opportune time for paper box users to anticipate their requirements and place their orders early.

PARCHMENT PAPER. — The Victoria Paper and Twine Company, who some time ago embarked on the manufacture of parchment paper report gradually increasing business in this line. The demand is steadily growing and at the present time the mill is several weeks behind with their orders. A decline of about five per cent in prices went into effect during the past week. For instance 27-lb. parchment is now quoted at 27 cents and 30-lb. at 24½ cents with other grades in proportion.

NEW YORK MARKETS.

New York, May 7. — (Special Correspondence.) — The strike of newsprint and pulp mill workers which became effective early this week has a tendency to alter the market situation both in print and in several raw materials used by paper mills. While actual prices have not yet been disturbed to any material extent, the newsprint, wood pulp and old paper markets evince a decidedly firmer undertone, and there are numerous indications that if the strike lasts some broad fluctuations in an upward direction are likely to develop in prices.

It is but logical that the closing down of some of the largest producing mills in the country, and the outlook of other plants having to stop operations on May 11, would have a stiffening influence on the newsprint market. Inquiry from consuming quarters has picked up to a noticeable extent, and there have been orders placed here and there by publishers who have thought it wise to contract for an extra supply of paper so as to insure their requirements in the event the strikes continues for a lengthy period. Sellers of newsprint are distinctly more bullish in their views and are generally holding unsold stocks at firmer prices. About the lowest quoted on spot newsprint in rolls in the open market is 5.50 cents per pound, and most of the available supply is held at higher figure than this. Publishers are well aware that present stocks of newsprint are ample to fill their normal requirements for at least six or seven weeks, but the refusal of manufacturers affected by the strike to quote on paper and the stronger tone exhibited by the market prompt some of them to be more desirous of adding to their stocks.

Gradual improvement seems to be taking place in other branches of the paper market. Fine papers are looking up both in demand and price, and signs point to jobbers regaining confidence in the stability of values and commencing to increase their stocks. President George A. Galliver of the American Writing Paper Company issued a statement several days ago explaining to the public that the mills of his company were not involved in the newsprint and pulp mill operatives strike, and saying that business in writing papers is beginning to show considerable improvement. Mr. Galliver states that last week was the best of any so far this year for his company, and that in his estimation the slump in buying which began last Fall is now a thing of the past and that continued expansion of trade can be expected from now on.

Activity in box board has broadened during the past few days. It is true that most of the additional demand for boards has been of a speculative character — coming from boxmakers and others who apparently believe prices have reached bottom and who therefore are laying in supplies against future requirements — but the fact remains that mills are securing more orders and the market presents a much livelier complexion. A leading board dealer in New York reports that his concern has sold a greater quantity of chip and news board within the past fortnight than in the two preceding months. Moreover prices are beginning to reflect the increased movement of board, and are hardening. A majority of Eastern mills are refusing to sell plain chip board at $30 per ton f.o.b. their points and are insistent on $32.50 to $35., while filled news board is generally quoted at $35 to $37.50. Several producers are understood to be accepting a limited volume of orders from regular customers at slightly lower prices than these.

Book papers hold fairly steady in price at a basis of around 7 cents per pound on machine finished book, and demand, if anything, is on the rise. Tissue paper manufacturers are rather firm in their insistence on a price of 95 cents per ream on No. 1 white tissue, basis 20 x 30, and the same price on No. 2 white and No. 1 manila, 24 x 36. There is a moderate demand for tissues although many buyers are confining their purchases to supplies to be had from second hands at less than the figures quoted by mills.

No change is reported in wrapping papers. There is a fair trade current, despite consumers buying chiefly in retail quantities. A bullish factor in the wrapping paper industry is that should the strike of newsprint mill workers continue for any appreciable length of time the probabilities are a good many manila mills would turn their machines over to print paper, thus reducing the output of manila papers and making for enhancement in value of such of these papers as are held in stock.

GROUND WOOD. — The strike at newsprint and pulp mills apparently has had a stronger effect on the ground wood market than in any other direction. Demand has broadened considerably, and owners of pulp who, a few days ago, were anxiously seeking to liquidate stocks now are holding up with considerable firmness and are making little effort to negotiate sales. The reason for this is obvious. It is generally recognized that those mills involved in the strike are the largest producers of ground wood pulp and unbleached sulphite, and that the surplus which they manufacture constitutes the bulk of supply which covers the needs of the numerous smaller paper and board plants throughout the country which do not make pulp. With these supplies removed from the market, which would be the case, should the millls whose employes are gone on strike be compelled to remain closed very long, consumers who depend on such sources for their pulp would of necessity have to look in other quarters for ground wood and sulphite, thus leading to a large increase in spot demand. Pulp grinders in New York State are reported demanding around $35 a ton at shipping points for spruce ground wood, while some are said to be holding for higher figures. Purchases from Canadian mills have been reported at $30, and in some instances at less, but supplies at such prices are declared to be becoming light.

CHEMICAL PULP. — A decidedly firmer price tone marks unbleached sulphite, news grade especially, and although other grades of chemical wood pulp have not been perceptibly affected by the strike situation developed this week, the general market position seems to be improved. Offers of $60 and $65 a ton to domestic producers for news grade sulphite have been flatly turned down in quite a number of cases, and it is authoritatively reported that most manufacturers are asking around $75 for this description of pulp f.o.b. producing plants. The same probabilities in the ground wood market, as outlined above,

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apply to unbleached sulphite, and it is these reasons that make for a stronger condition in this end of the chemical pulp trade.

Several of the leading domestic and Canadian producers for news grade sulphite are quoting 6.50 cents a pound at their plants for their product, and are said to be refusing orders at lower prices. On the other hand, some domestic mills are offering bleached sulphite at almost a cent per pound below this figure. The pulp involved doubtless is not of as fine quality as the higher-priced pulp, but the fact remains that bleached sulphite is available at sharp concessions. There is little important activity in kraft pulp, sales being of an occasional order and seldom involving large tonnage. Importations of pulp from Europe at New York recently have been practically nil, and there is little stirring in this branch of the trade.

RAGS. — Demand for papermaking rags continues dull. The inflow of rags from collection centres and the gradual accumulation of stock in dealers' establishments, make for an easy price tone. White shirt cuttings of No. 1 quality are reported to have sold at less than 10 cents a pound at shipping points, while No. 1 washables are reported available at 5 cents, fancy shirt cuttings at 6.75 cents, old No. 1 repacked whites at 6 cents and No. 1 miscellaneous packing at 4.50 cents, and repacked thirds and blues at 2 cents. Roofing rags are seldom bringing more than 65 cents per hundred pounds at dealers' points for No. 2 satinets.

PAPER STOCK. — Expectations of consuming mills being forced into the old paper market for increased quantities of waste paper as a result of the closing down of pulp mills because of the strike make for a firmer tone in the paper stock market than has been evident in a long time. Buying interest in white news cuttings is much more to the point, this being one of the leading descriptions of old paper substituted for ground wood, but prices still range around 1.35 cents a pound at shipping points. No. 1 mixed paper is moving in larger volume but at unchanged prices, board mills having as yet no difficulty in covering their wants at 25 to 30 cents per hundred pounds. Book stock is in fair call, with sales of No. 1 magazines reported at 80 to 85 cents f.o.b. New York, and old kraft paper is meeting with a moderate sale at about 1.50 cents for No. 1 packing. Shavings are quotably unchanged.

OLD ROPE AND BAGGING. — A steady demand prevails for old manila rope and car lot quantities are readily fetching around 4 cents per pound at shipping points in sales to mills. A sustaining factor is that stocks of rope in dealers' hands give every sign of being unusually light, while arrivals of rope from foreign sources are infrequent and of rather small volume. Old bagging is neglected by consumers and prices are strictly nominal, there being so little business passing that no established value basis exists.

PRICES ON GENERAL CHEMICALS.

Current Wholesale Prices in New York Market, Week of May 4th, 1921.

		Carlots	Less Carlots
ACID Acetic, 56%	100 lbs	4.00 - 4.25	4.50 - 5.50
ACID Glacial, 99½ % carboys	100 lbs.	9.50 - 9.75	10.00 -10.50
ALUMINUM Sulphate, commercial	lb.	.02¼ - .02½	.02¾ - .03
ALUMINUM Sulphate, iron free	lb.	.03¼ - .03½	.03¾ - .04¼
BARIUM Sulphate (precip.) (blanc fixe)	lb.	.04½ - .05	.05½ - .06
CALCIUM hypochlorite (bleaching powder) ..	100 lbs.	2.25 - 2.40	2.50 - 2.75
CHLORINE, gas, liquid-cylinders (100 lbs.) ..	lb.	.08 - .09	.09½ - .10
GLYCERINE C.P. (drums extra)	lb.	... - ...	.17 - .17½
LITHARGE	lb.	.08¾ - .09	.09½ - .10
POTASSIUM Bichromate	lb.	.11 1-3 .11¾	.12 - .12½
SALT Cake	ton	... - ...	33.00 -35.00
SODA Ash, light ..	100 lbs.	2.00 - 2.10	2.20 - 2.40
Soda Ash, dense ..	100 lbs.	2.30 - 2.35	2.40 - 2.60
SODIUM Borate (borax)	lb.	.06½ - .06¾	.07 - .07¼
SODIUM Carbonate (sal soda)	100 lbs.	1.90 - 2.00	2.25 - 2.50
SODIUM hydroxide (caustic soda)	100 lbs.	3.65 - 3.75	3.80 - 4.00
SODIUM Prussiate, yellow	lb.	.11½ - .11¾	.12 - .12½
SULPHUR, crude	ton	20.00 -22.00	... - ...
SULPHUR Dioxide, liquid. cylinders extra	lb.	.08 - .08½	.09 - .10

New York Chemical Market has not developed very actively. Buyers are still holding themselves in readiness to take advantage of any recession.

The demand for soda ash, both light and dense, is fair, the spot market having been practically depleted.

Holders of large stocks of Bleaching Powder tend to cut prices to a certain extent, and a price of $2.10 has been heard of at works, though it is hard to get authoritative information of prices under $2.25.

The Alum market is steady.

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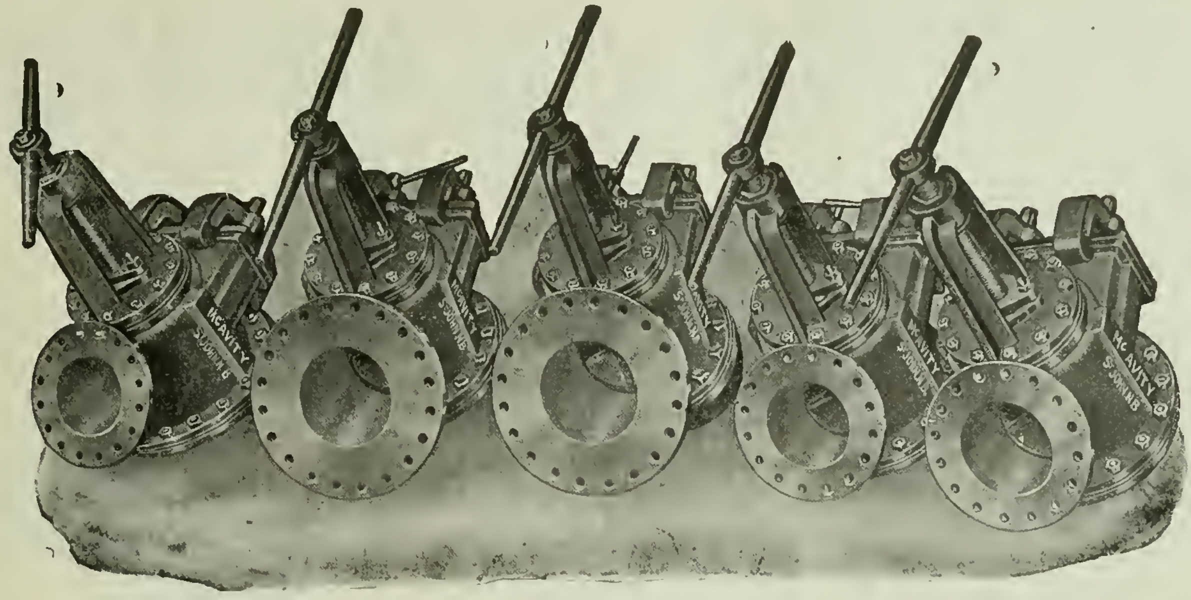

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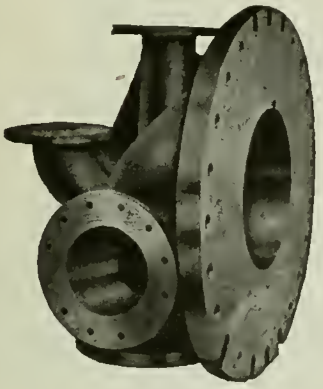

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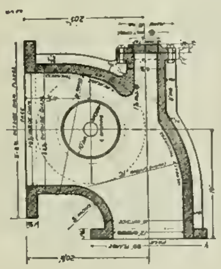

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News From Our Advertisers

SANDY HILL I. & B. ELECT OFFICERS.

At the annual meeting of The Sandy Hill Iron & Brass Works, held at Hudson Falls, New York, May 2nd. 1921, the following directors were elected for the ensuing year:

A. J. Kennedy, R. C. Tefft, J., C. W. Kellogg, H. L. Broughton, J. M. Ferris.

Following the stockholders meeting the directors met and elected the following officers:—

A. J. Kennedy, President; R. C. Tefft, Jr. Vice President; J. M. Ferris, Secretary-Treasurer.

NEW ADDRESS OF JAMES D. LACEY & CO.

After May 5 the New York office of James D. Lacey & Co., will occupy larger space in the new Borden Building, where facilities are available for our specialized service as Timber Land Factors, which has been rendered for over forty years.

The location is just north of Forty-second Street, corner of Forty-fifth in the heart of the new "uptown," on the 23rd floor, room 2306, but 350 Madison Avenue is sufficient address for mail.

THE HUDSON TRADING COMPANY MOVES.

The Trade will be interested to learn of the removal of the Hudson Trading Company, Paper and Pulp Merchants, on May 1st, 1921, to the seventh floor of the new building, 300 Madison Avenue, corner of 41st Street, New York, N. Y. The Company has taken the entire seventh floor in the new building which will afford three times the space had in the old offices.

The present change marks a new milestone in the successful progress of this concern and records another chapter in its long history. Established in the year 1886 by its President, Mr. M. Gottesman, the Hudson Trading Company is now counted as one of the most important factors in the Pulp and Paper Industry.

The Hudson Trading Company maintains offices and branches in all parts of the world and has established a truly international organization, devoted solely to the Paper and Pulp Trade.

One of the conveniences that they have instituted in their new offices is a special room reserved for the use of out-of-town mill men who visit New York.

Officers of the Company are, President M. Gottesman; Vice-Presidents—Saul Gottesman and Benjamin Gottesman; Secretary—Herman Gottesman.

Escher Wyss & Company of Montreal, have recently been awarded the contract for 2 six-million Imperial gallon pumps and motors, for the Peterborough Filtration Plant. The motors and switchboard are to be supplied by the Canadian General Electric Company Limited.

Price & Pierce, Ltd., prominent New York paper and pulp dealers have moved on May 12th to a new suite of offices in the National City Building, 17 East 42nd St., corner of Madison Avenue, directly opposite their old location, which was at 30 East 42nd St.

Charles James Bowell, President and Manager of The Intelligencer Printing & Publishing House, Limited, passed away this morning at his home, 161 Albert street, Belleville, Ont., after an illness of some duration.

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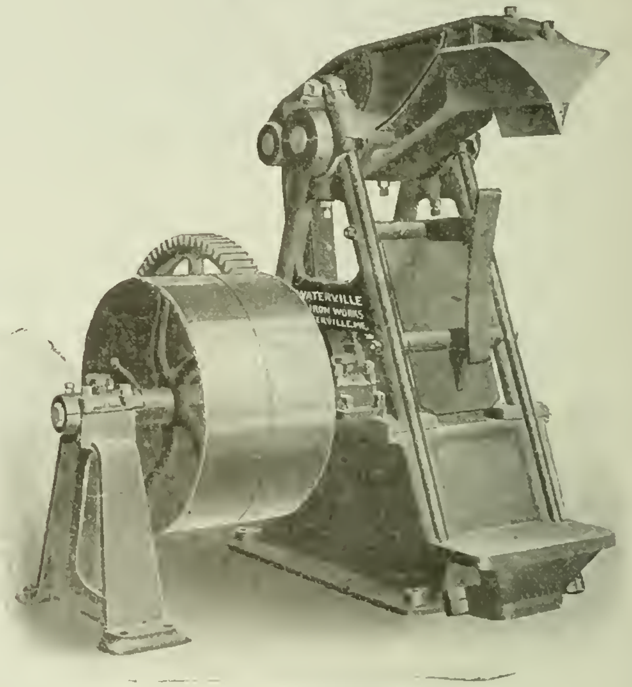

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VOL. XVIX. **GARDENVALE, P. Que., May 19th 1921.** **No. 20**

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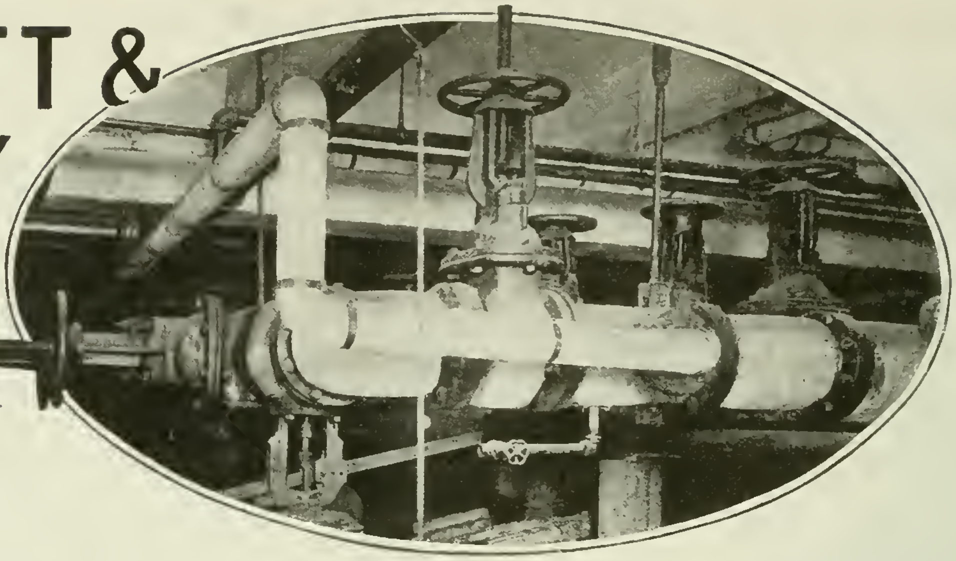

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EDITORIAL

THE 8 CENT LIMIT STILL HOLDS.

There is an interesting editorial in large type on page 40 of the "Paper Mill and Wood Pulp News" for May 14th on the subject of the 8 cent limit. Unfortuunately, the comment on this subject is based either on misinformation or intentionally misrepresents the situation. In either case the large number of readers of the Paper Mill will be misled by this article.

The statement is made that on September 8th 1916, the Congress passed a law which permitted printing paper valued at not more than 5c to be imported into the United States free of duty. This raised the level by 100 per cent. of the previous figure. On April 17th 1920, this limit was again raised to 8c per pound. The Paper Mill states that this bill, which was signed by President Wilson on April 23rd 1920, was for the period of one year only and that consequently the period of enforcement expired on April 22nd last. On reading this bill and obtaining telegraphic confirmation on same from the United States, we wish to make it distinctly understood that the bill did not expire last month and does not expire until April 22nd 1922. It is commonly understood that the truth never catches a rumor but we trust this correction of the mis-statement of our contemporary will at least abbreviate the period of uncertainty and possible worry that may have been caused some of our readers.

Having made this unfortunate mis-statement, the Paper Mill goes on to argue over an import duty on all newsprint valued at more than 2½c. per pound, which of course, means all newsprint. The principal point brought out is that free paper puts the American manufacturer at a decided disadvantage in competition with the German paper maker who is subsidized by his government at the rate of a bonus of 500 marks per ton of newsprint export, and that the German manufacturer obtains his wood from public lands at cost of $7.20 per cord. This subsidy figures out about $10 per ton at the present rate of exchange and is about 100 per cent. of the present value of newsprint in New York. Putting a duty on the price of imported paper would simply make the American publisher pay that much more for his supplementary supply, it being well known that the American newsprint industry cannot begin to supply the normal demand for printing paper in the United States. It is also well known that the price of newsprint in the United States is made on the basis of the cost of production in American mills and is in no sense controlled, and probably not even influenced, by the cost of production elsewhere. It should be stated further, that the opinion expressed by those who have used German newsprint is that it cannot compete in quality with the American or Canadian product, so competition from this source is not to be feared, inasmuch as those who have used the German product are not particularly anxious to repeat the experience.

In any case it will be seen that an import duty on newsprint, no matter what the price limit, will simply make the American publisher pay that much more for the portion of his paper which must be imported. At any rate it should be remembered that the present law will continue in operation and in force until April 22nd 1922. In the meantime, a number of things may happen but one of these things is not likely to be a law which will require the American newspaper publisher to pay an import duty on newsprint.

THE COST OF CARELESSNESS.

The reports of the President and of the Safety Engineer for the Ontario Paper Makers' Safety Association, which appeared in the Pulp and Paper Magazine for May 5th, contain a statement the significance of which is just beginning to make an impression on the editor's consciousness. We refer to the amendment which is being added to the Ontario Workmen's Compensation Act increasing the scale of compensation from 55 per cent to 66 2-3 per cent of the workman's earnings with a corresponding increase in pension awards and the intimation that even further increases may be made in the near future.

Coupled with this announcement, which must indeed have startled the manufacturers of Ontario, comes the statement in the report that the cost of compensation in 1919 was $251,057 as against $134,397 in 1918. What may be expected for 1920 is indicated by the report that there was an increase of 40·98 per cent in nonfatal accidents and an increase of 112.5 p.c. in fatal accidents during 1920 as compared with 1919. During this time there was an increase of 10·23 per cent in the number of full year workers. Summing this up we can see that, on the average, each full day worker in 1919 lost 1·99 full days, while in 1920 this loss was 3.22 days. The total time lost in days work during 1920 reached the astounding total of 25,453.

Surely this condition is a very serious one. The prevention of accidents has been engaging the best thought of the managers of pulp and paper mills in Ontario for many years and for a number of years they have formed a special organization so that the experience, thought and advice of all, under the direction of a capable engineer, are available for the benefit of the whole industry in that province. Moving pictures have been shown, safety rallies have been held, contests have been inaugurated, to arouse not merely the momentary interest of the manager and the workmen but to establish a basis for continued attention and co-operation in eliminating, or at least postponing, the day when a workman can no longer perform his accustomed task. In spite of all these efforts, and in many mills they have been accompanied by conscientious attempts to cooperate on the part of the workmen who have formed committees for the purpose, we find the accident rate increasing and what is more unfortunate, we find the severity rate also increasing. This condition may not be confined to, nor typical of, the pulp and paper industry, but the pulp and paper industry is the business with which the life of nearly every reader of the Pulp and Paper Magazine is wrapped up. It is the business of each one of us to do our share in removing this scourge.

With evidence on every hand of the care and attention which managements through safety committees, safety engineers, and guards and warnings conspicuous in every plant, there is no question whatever in our mind but that the heart of the difficulty is in the mind of the workman. By this we mean that there is in the average workman's mind, a cavity just about the size of 3¼ days honest work which would be filled with productive effort and full earning power if it were inhabited by an average of one more thought per day. There is no doubt whatever but that this curse of carelessness and thoughtlessness is the cause that is costing the industry what is fast becoming an unbearable burden and is costing the workman and his family a vast amount of unnecessary pain and suffering, even want of daily necessities.

The introduction of the Workmen's Compensation Act in Ontario and similar legislation in other provinces is certainly an advance over the old system whereby the workman was required to bear too great a share of the misfortune of an accident and particularly so where the employer was obviously to blame through lack of proper safeguards. The employer of the present day, however, recognizes the advantage both from an economic and humanitarian point of view in keeping his workmen physically and mentally at their highest efficiency; consequently there are few unguarded points in the paper mill and there are no sources of accident which cannot be easily avoided at the cost of a thought on the part of the workman. Since the editor learned that while calenders "have no teeth their gums are hard," feeding fingers and improved doctors have done away, at least on one familiar old Fourdrinier, with the necessity for the back tender to get very close to this source of danger. Other parts of the mill have been likewise protected but there is only one thing that will prevent a man from deliberately walking through an open main drive belt, or pulling out sticks from the **bottom** of a block pile, or lifting an elevator gate to see which way the elevator is moving, or standing on a gear guard to oil a machine, or throwing in a switch while men are working on the line, or leaving obstructions in a passage way, or throwing material out of windows without first looking below, or doing about fifteen thousand other simple acts of carelessness which occur everyday—and that single preventive is a **thought.** If the average workman is not willing to give this contribution to the industry which employs him when the lack of such thought is costing the industry in a single province more than a quarter of a million dollars a year, then it seems to us that he had better be invited to find employment in the middle of an open field where if he can find a chance to do injury it will only be himself that will suffer.

Workmen's compensation is almost putting a premium on carelessness and the burden on industry has reached the limit. **The careless man must go.**

COBWEBS.

A reader wants to know if that item in our last issue about asking the minister to preach a monthly Safety First sermon refers to protection from fire.

Mr. B. F. Avery, of the Spanish River Mills, is the proud husband, (pictures in the News prove it!) of Miss Mary Stone. Wonder why they chose the Secretary of Industrial Relations for best man—By the way, he and the maid of honor make a pretty good picture.

Apropos of the above comment on accidents, The Broke Hustler says that five departments at Iroquois Falls have been operated four months without an accident. They are: Sulphite, Mixing Room, Finishing Room, Saw Mill, and Fire Protection and Sanitary, involving 126 workmen. We lift our hat, gentlemen.

Financial experts see, in the recent recovery of foreign exchanges, reason for anticipating better trade conditions.

The editor had the pleasure last week of meeting Mr. Paul Jouanneau of Vaissier et Caron, papermakers of Vendome, France. He is visiting some typical sulphite, groundwood and paper mills in Canada and the United States, with the particular object of studying at first hand the manufacture of some of the pulp his company will use. Madame Jouanneau accompanies her husband.

We were glad to learn that the French mills are recovering, and that imports from Germany are decreasing because the home mills can now sell paper at about half the price of a year ago.

The Relation of the Moisture Content of Wood to its Decay, with Special Reference to the Spraying of Log Piles

By WALTER H. SNELL,
Assistant Professor of Botany, Brown University and formerly Forest Pathologist,
U. S. Department of Agriculture.

The prevention of fire in piles of pulp wood by means of artificial fog has been advocated recently by F. J. Hoxie[1]. The idea is of course to keep the wood wet enough to prevent its catching fire. But while the log piles are being protected from fire, a question naturally arises:—is this wetting of the logs going to bring conditions favorable to decay and thus cause as much loss as, if not more than, what is now caused by fire?

The growth of the wood-destroying fungi in wood is dependent upon a certain amount of moisture and of oxygen, granting that these fungi have a favorable food to grow upon and a favorable temperature. The amounts of moisture and air within the wood are directly related one to the other. Wood is made up of cells which are hollow, the hollow portions of lumina being large or small according to the density of the wood. Hence, in a light wood like spruce (figure 1) we find the walls thin and the empty spaces (the lumina) rather large. While in a hard pine (figure 2), the walls are thick and solid and the lumina correspondingly smaller. These lumina of the wood cells may contain either water or air, and it is clear that those portions not filled with water will have air in them and vice versa. If water is forced into the wood, air will be forced out and if water is withdrawn from the wood, air will enter.

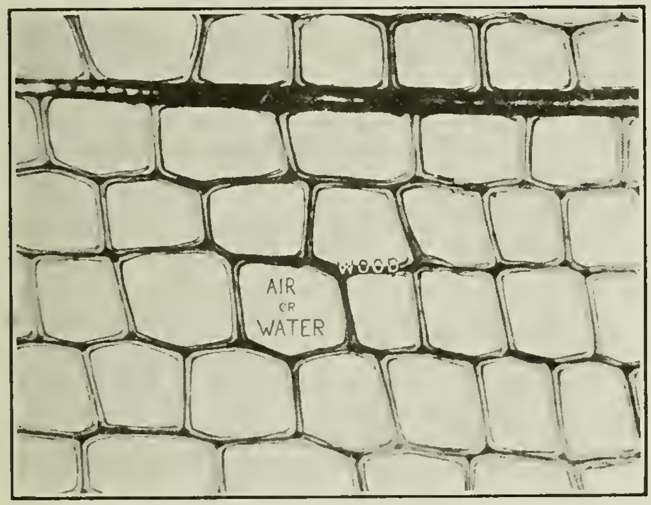

Figure 1. Cross section of spruce, a light wood, showing relatively small amount of wood substance and large lumina, which may contain air or water. x 300. Photograph by F. J. Hoxie.

As already mentioned, the growth of fungi within wood is dependent upon a proper amount of air and moisture—which means a proper balance between the air and moisture supply within the wood. If too little moisture is present, fungi cannot grow for the lack of it. If large percentages of water are present in the wood, fungi cannot grow, not because there is too much water, but because there is too little air. In other words, a fungus will drown under water, where it cannot get air, just as a man will. Drowning of plants and animals is essentially asphyxiation. Between the two limits where there is too little moisture to support fungus growth and where there is too little air because of its displacement by water, there is a wide zone where growth is possible, and a certain peak in the curve where conditions or air and moisture are at the optimum. It is important to know just what relation exists between the moisture and air content of pulp logs which are constantly sprayed as mentioned above and the three cardinal points (minimum, optimum and maximum points of growth) in the air-moisture curve of wood-destroying fungi.

The purpose of this article is to reveal what is thus far known regarding the air and moisture relations of fungi which decay wood. The data are taken from a paper published in Germany by Muench[2] and from preliminary experiments made by the writer. The German writer performed an extended series of experiments upon the fungi which cause the sapstaining or bluestaining of sap lumber, and also upon several fungi which decay wood. In general he found that none of the fungi of either group could invade fresh (that is, green) sapwood, which contained 50% of water (equivalent to 143% of water calculated on the oven dry weight of the wood). As the wood was dried, however, it was found that the fungi invaded the wood more deeply and did more damage the drier the wood, up to a certain limit.

Table one shows the results of Muench's experiments upon the moisture relations of one of the sapstain fungi (**Ceratostomella coerulea**) in the sapwood of

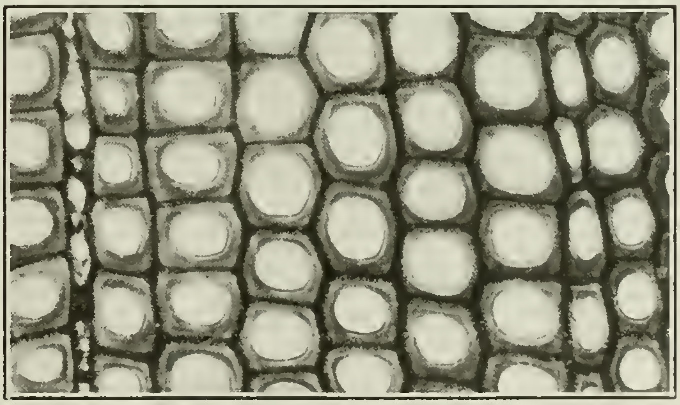

Figure 2. Cross section of jack pine, a medium heavy wood, showing relatively large amount of wood substance in the thick walls and smaller amount of air and water space. Compare with spruce in figure 1. x 300 Photograph by F. J. Hoxie.

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[1] F. J. Hoxie, Fire prevention in pulpwood by means of artificial fog. Pulp and Paper Magazine of Canada, Jan. 6 and 13, 1921.

[2] Muench, E. Untersuchungen ueber Immunitaet und Krankheitsempfaenglichkeit der Holzpflanzen in Naturwissenschaftliche Zeitschrift fuer Forst—und Landwirtschaft 7:54.

Scotch pine. In columns 2 and 3 the results are given on the basis of air volume and the volume of water **within** the cell cavities (exclusive of the water in the cell walls themselves) on the basis of 100 cubic centimeters of wood. In column 5 of the table, Muench's figures are translated into the engineers' terms of percentage of water determined upon the basis of the total weight of the wet log. Column 6 gives the figures in terms of water over and above the oven dry weight of the wood. It is seen from the bottom of column 5 that 23% of water allowed very little penetration (or staining) of the wood by the fungus, that from 25% up to 42% of water allowed the maximum amount of staining, and from there up to 54% there was a gradual decrease in fungus growth and none at all at 59%. Column 2 shows that for the most favorable growth of this fungus within wood, there must be a quantity of air equivalent to about half the volume of the block (42 to 59 cubic centimeters in 100). Muench did not give figures for the growth of the true wood-destroying fungi, but showed that in general the same figures given for the sapstain fungi held true for the wood destroyers. He did not, however, point out that these percentages hold only for woods of about the same density as those he used and that they do not apply to lighter or heavier woods.

Table 1.—Data obtained by Muench upon the relation of the growth of a sapstain fungus (Ceratostomella coerulea) to the moisture and air supply in Scotch Pine Sapwood.

Results as tabulated by Muench on basis of 100 ccm. of wood				Results shown as moisture % of total weight of wet wood	Results in terms of water above oven dry weight of wood
1	2	3	4	5	6
Block	Air in wood	Volume of free water above fiber saturation	Penetration and staining by fungus		
1	15 ccm	45 ccm	none	59%	143%
2	23 "	35 "	little	54%	119%
3	25 "	32 "		52%	111%
4	36 "	24 "		48%	92%
5	38 "	22 "		47%	88%
6	40 "	18 "		44%	78%
7	42 "	16 "	optimum for growth of fungus	42%	74%
8	47 "	11 "		38%	62%
9	54 "	4 "		31%	45%
10	55 "	5 "		31.6%	46%
11	59 "	—1 "		25%	33%
12	61 "	—3 "		23%	28%

In order to check up Muench's figures and to get more exact data for the latter class of fungi, the present writer started some experiments in the Department of Botany at Brown University upon the moisture relations of five of the fungi found decaying structural timbers in New England cotton mills [3]. The fungi are **Lenzites sepiaria, Lenzites trabea, Trametes serialis, Fomes roseus** and **Lentinus lepideus**. The first four of these are found quite commonly on pulp logs. Two woods of different densities were used in the tests —loblolly pine sap weighing 27.5 lbs. to the cubic foot and Sitka spruce weighing about 22 lbs. (specific gravities of .44 and .35 respectively). Only one series of tests has thus far been completed, but the results obtained are of value in the present discussion upon the spraying of pulpwood and the question of decay in the wet piles. Further experiments upon this relation between decay and the moisture content of wood, especially the relation of the density of the wood to the moisture-decay curve, are still in progress.

The results upon the loblolly pine sap are very closely in line with those of the German writer on Scotch pine. There was found to be very little decay when the amount of water was below the fiber saturation point (25% in terms of the oven dry weight of the wood), but with increase of moisture content the decay became more extended. The greatest amount of decay occurred between 33% and 42%. From 42% on, the amount decreased. At 50% there was a little decay and none at 60%.

Conditions were different with the spruce, a lighter wood. Penetration and decay by the fungi began a little below the fiber saturation point for this wood and increased in amount with higher percentages of moisture. The greatest amount was between 30% and 57%. There was no penetration by the mycelium and decay at 67%. It is seen that the latter values are higher for the pruce than for the sap pine. Obviously, the values representing the upper moisture limits for decay will vary inversely with the density of the wood.

With reference to the decay of pulpwood, however, the figures on Sitka spruce represent an extreme case, for this wood is lighter than any of the other pulpwoods. Table II shows that the Sitka spruce used weighed 22 lbs. to the cubic foot while poplar, balsam and red spruce weigh 26-27 lbs. or very near the density of the pine sap used. Hence, the figures on the relation of moisture content to decay of the loblolly pine sap will be applicable to the pulpwoods.

Table II.—Densities of a few common woods, including some woods used in making pulp.

	Density (lbs per cubic foot, oven dry.)	Specific gravity (weight and volume oven dry.)
White oak	44	.71
Sweet birch	43	.70
Sugar maple	41	.66
Longleaf pine.	40	.64
Paper birch	38	.60
Pitch pine	34	.54
Loblolly pine sap* . .	28	.44
Cottonwood.	27	.43
Balsam	26	.41
Red spruce.	26	.41
Sitka spruce*	22	.35

* These two woods were the ones used in the tests quoted.

In a recent article, Sutermeister[4] reports that spraying a pile of poplar logs for a short period resulted in the pulp bolts taking up water to the amount of 52% to 60%. The logs sprayed as he describes were covered with molds and slime molds, were nearly black in color and had the appearance of being badly decayed. Examination proved, however, that "the greater part of the wood was sound and very few logs could be found which were soft enough to allow a knife to be driven into them more than a quarter of an inch".

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[3] A study of these fungi carried on by the writer at the Forest Products Laboratory at Madison, Wisconsin, is soon to appear as a Bulletin published by the United States Department of Agriculture.

[4] Sutermeister, E. Spraying wood for preservation and fire protection. Paper, pp. 21 and 30. Dec. 22 1920.

If spraying a pile of logs for a few months added 52% to 60% of water, continuous spraying over longer periods would probably increase the amount of water. The writer's experiments with five different fungi, four of which occur upon pulpwood, show that 60% of water in the logs will eliminate all danger of serious loss from decay. These results should enable pulp mill owners to proceed with confidence in the installation of a spray system such as advocated by Hoxie. A constant spray or "artificial fog" will keep the logs sufficiently wet to protect them from both fire and decay. Logs so wet will mold on the outside, but molds do no damage to wood beyond discoloring it superficially.

NEW BROMPTON BONDS TO YIELD 8.10 PER CENT.

Greenshields & Company, have issued their prospectus dealing with the public offering of $2,500,000 of Brompton Pulp & Paper Company, Limited, 8 per cent convertible 20-year mortgage bonds at 99 and interest. The issue is dated May 1, 1921, and is due May 1, 1941, interest payable semi-annually May 1 and November 1 at Montreal, Toronto, Halifax, Winnipeg and Vancouver. Coupon bonds of $1,000, $500 and $100 denominations are issued with privilege of registration as to principal only.

The bonds are callable in whole or in part on any interest date at the option of the company at 110 and accrued interest to May 1, 1931, provided holders be given 90 days' notice in which to exercise conversion privileges; after that date at 105 to May 1, 1936 thereafter at par.

The circular gives the total authorized bonded debt, including the present issue, at $6,707,000 of which $5,913,000 is issued. The 8 per cent cumulative preferred stock is fully issued, $2,000,000, and the 210,000 shares of no-par-value common stock authorized is issued to the extent of 140,000 shares, or $7,000,000. Bonds of the current issue are convertible at any time until May 1, 1931, at holders' option, into common stock on the basis of 20 shares of common for each $1,000 par value of bonds.

Full details of the Brompton plants and operations are given in the circular, but these have been reviewed in these columns a number of times and require no further comment at present.

BOARD APPROVES CANADIAN TIMBER.

The Department of Trade and Commerce has been informed that practical tests of British Columbia timbers—Douglas fir, B.C. spruce and western hemlock—by H. M. Board of Works, London, on behalf of the advisory committee on timbers of the Imperial Institute, have proved quite satisfactory and that as a result these woods will be included in the official timber specifications of that department as alternatives to European joinery timbers.

TECHNICAL SECTION SUMMER MEETING.

The time for the Summer Meeting of the Technical Section is approaching and the Executive Council have decided to hold it in the St. Maurice Valley. Those who accompanied the Technical Section four years ago will remember a very pleasant and instructive trip in this same district and with the developments which have taken place since that time, no member can afford to be absent.

The railroad authorities advise it will be possible for the Section to travel using the regular trains, and special sleepers will be retained for use at the different mill points. This arrangement is made on account of the difficulty of accommodation at points such as Three Rivers and Grand Mere.

There will be no papers on this trip. It will be an outdoor meeting and the hope is to see the St. Maurice plant, the vast undertakings which have been consummated at the Laurentide mills, and the magical changes which have been made at the Belgo Company.

The party will leave Montreal at 10.30 (Standard time), Windsor Station on the evening of *Tuesday, June* 14th, and will be back on the night of Friday, the 17th, in time for out of town members to make connections for Toronto and elsewhere.

The cost of the trip exclusive of meals will be $20 per person. This will include train fare and the use of sleeper for the period of the trip. Everybody cannot have a lower berth but first come will be first served.

Members should return postcards (sent out this week) as quickly as possible so that this secretary may make proper arrangements.

PROGRESS OF NATIONAL FORESTRY PROGRAM COMMITTEE.

Dr. H. P. Baker, Secretary of the American Paper & Pulp Association is being scheduled for a series of talks to Rotary Clubs and similar organizations in Ohio and Michigan during the early part of June, when he will discuss the Snell bill from the standpoint of the needs of the paper industry for a continuous supply of raw material.

Valuable ammunition showing the need of reforestation is available through the announcement by the New York State College of Forestry at Syracuse that its wood using survey of New York State, made in cooperation with the United States Forest Service, shows a 30 per cent decrease of the number of wood using concerns in the state since 1912, as a result of the disappearance of the forests which furnished their raw material. This survey is indicative of what would be disclosed by survey of other states.

The Pittsburgh Flood Commission has, through Maj. W. M. Jacoby, published a strong appeal to the Pennsylvania Legislature to enable the Federal government to secure land for a national forest to protect the headquarters and avert floods in the Ohio River.

After a short period of full time service for the National Forestry Program Committee, the secretary, W. B. Bullock of this committee, has been made head of a new department in the American Paper and Pulp Association, which was from the start a leader in the campaign for a national forest policy. Because of the interest of the paper industry in forestry, and of the secretary's own interest in the problem, he will be allowed by the association to continue his work for the national committee without salary, but as a "labor of love."

PRESERVATION OF CANADIAN PULP AND PAPER INDUSTRY.

Editor, Pulp and Paper Magazine.

I have recently read remarks by an American Paper Manufacturer, who is, quite naturally, selfishly interested, regarding the proposed Canadian embargo against the export from Canada of pulpwood for the United States Mills. I note that the advocacy of such an embargo by Canada is described as "propaganda of men striving to serve personal ends," and from "selfish interests." But it seems to me that the selfishness is entirely on the other side, when the American Mills want to deprive the Canadian pulp and paper manufacturer of his raw material.

If wood were being shipped from the United States to supply the Canadian Mills how long do you think it would be before some action would be taken along these same lines?

Canada is in a much worse plight so far as her available supply of standing timber is concerned than is the United States. So far as my own personal ends are concerned, my mills in Canada have the largest supply of standing wood, based on their capacity, of any pulp mills in the world, all of which land is owned in fee, with the wood now exportable to the United States. Consequently, I cannot be accused of selfish interests in supporting an embargo or export tax on pulpwood.

I am perfectly willing to acknowledge that the situation with regard to a supply of raw material for the mills on both sides of the line is critical, and, as a matter of fact, sulphite pulp, at least, should even now be manufactured out of some annual crop instead of trees, even though the quality would be inferior, and the cost much greater. We need what standing wood supply now remains for the building of homes and uses for which there is no substitute for wood.

I note it is stated that Alaska can furnish perpetually one third of the print paper consumption in the United States, but when we consider that paper uses only about three per cent. of the total amount of wood consumed anually in the United States, one-third of this would be merely one per cent. of our total consumption, so we might as well forget Alaska. Furthermore, as a matter of fact, when Alaskan wood is used to any extent it will not be reserved for paper alone but will be used for all other purposes for which wood is required. And, when you consider that the entire supply in the Alaska National Forest would last the United States for all purposes only a matter of about one year, it will be readily seen that we are only raising a false hope in counting upon Alaska for a future paper supply.

Some idea of the enormous consumption of wood and timber in the United States can be gained from the fact that if the entire supply were drawn from Canada alone, the total available Canadian supply would last the United States only about six years.

The present temporary surplus of pulpwood and lumber was simply brought about by the high prices of 1920, which enabled the lumbermen to operate in the remote sections that contain our present remaining supply. As soon as business returns to normal, this apparent surplus will very soon vanish and will not be replaced until prices become sufficiently high so that the lumberman can again pay for the long hauls. In proof of this assertion, lumber is being sold at the present time at an actual loss of $15 to $20 per thousand feet, and pulpwood in about the same proportion.

This shortage of standing timber is world-wide, so we cannot look to other countries for supplies. As soon as business resumes anything like normal proportions there will be a sad awakening for our pulp and paper mills in so far as their supply of raw material is concerned; and that is why I say these mills should begin even now to use some annual crop as a substitute, at least for their sulphite pulp.

When such authorities as Senator W. C. Edwards of Ottawa, one of the best posted lumbermen of Canada, state that the standing supply in Eastern Canada will be exhausted in about twelve years, and R. W. Hibberson of the well-known timber cruising firm of Hibberson Brothers of Victoria, British Columbia, advises us that even British Columbia will be facing a timber famine within fifteen years, surely the time has arrived for some immediate action towards the retaining of our remaining supply for our home industries.

FRANK J. D. BARNJUM.

Annapolis Royal, N. S., May 11, 1921.

TRADE INQUIRIES FROM JAPAN.

Mr. A. E. Bryan, Trade Commissioner in Yokohama, Japan, has transmitted the following trade inquiries from that country to the Dominion Department of trade and Commerce.

2963. *Wood-pulp.*—An important organization in Southern Japan wish to be put in touch with Canadian mills interested in the export of sulphite pulp to Japan. Samples and prices are requested at once.

2964. *Wood-pulp.*—An old-established British firm in Kobe wish to receive samples and prices of Canadian bleached pulp. They are of the opinion that they could submit good business, providing that price and quality of pulp are satisfactory.

2965. *Pulp and paper.*—An American firm which has been doing business in Japan for several years in Osaka and Kobe are interested in Canadian pulp and paper for future business, and would be glad to receive samples and prices from Canadian mills. They state that business is a little slack at the present time, but if samples and prices were to be had they would be able to jump in and get business at the opportune moment.

2966. *Paper.*—An import and export concern with branches in all the important cities in Japan are anxious to get in touch with Canadian manufacturers of high-class writing paper, bonds, ledger papers, etc. Samples and full particulars should be sent at once.

2967. *Wood-pulp.*—A Japanese concern of good standing would like to receive samples and prices of Canadian bleached and unbleached pulp. They intimate that they are in a position to get good business, and would like to get in touch with some Canadian mill who could make good deliveries and who would be willing to form a permanent connection.

WORK MAY BE RESUMED AT KAPUSKASING.

According to reports from Cobalt, it is probable that the work on the construction of the mill and dam of the Spruce Falls Company at Kapuskasing, which has been suspended, will be resumed at an early date. There are 75,000 cords of wood in the river for the company. It is also stated here that plans are being made for the erection of a small pulp mill on the Frederickhouse River, at Connaught, to handle the 25,000 cords of wood there, and that this will be in operation this summer.

The Forest Products Laboratories of Canada

By A. R. R. JONES.

The work done by the Forest Products Laboratories of Canada deserves to be far more widely and generally known than it is. It is work of the highest importance by reason not only of its present intrinsic usefulness but also of its potentialities of future development. The organization is under the Forestry Branch of the Department of the Interior. It is located at 700 University Street, Montreal. The buildings which are in the grounds of McGill University, are occupied free. These buildings include the laboratories building, which houses the paper machine, the pulp and paper division chemical laboratory, the digester house, and carpenter shop. In addition to these, the Forest Products laboratories share with McGill its strength-of-material testing laboratory, in which, in fact, it owns certain machinery, while it also uses other machinery which is owned by McGill.

The total staff of the Forest Products Laboratories, exclusively devoted to research and experimental work, numbers about 18. A good deal of misconception, perhaps, prevails as to the true function of such an institution. The right view is that its proper function is scientific and industrial research in connection with woods and with every product manufactured or derived therefrom by mechanical or chemical processes. It is not generally known that a vigorous reorganization of the laboratories has been going on during the last seven months, in which time seven technical men have been added to the staff, while there are several positions still to be filled. Mr. W. Kynoch is the superintendent of the institution, the work of which is divided into four divisions of research and technical service.

First, there is the division of Pulp and Paper. At the present moment, the post of head of this division is vacant. The main lines of research, in this division, as to the work in which, as is naturally appropriate in a publication of this kind, something will be said in some detail, a little later on, comprise the utilization of waste sulphite liquor; the manufacture of blotting paper; the chipping, drying and baling of pulpwood for shipment; the chemistry of Canadian woods in relation to pulp manufacture, the relation of relative humidity and temperature to the moisture content of woods (this work is transacted in co-operation with the division of Timber Physics); the beating of pulp, that is to say, the reduction of this operation to a scientific process; the sulphite process, namely the penetration of cooking liquor in relation to moisture content of chips, etc.; the efficiency of newsprint splice (this work is done in co-operation with the division of Timber Tests).

Secondly, there is the division of Timber Physics. In this division, of which Mr. J. D. Hale is the head, the research is concerned with the physical properties of timber, starting with the anatomy of timber, which is the basis of the whole thing. The main lines of research in this division include fibre length studies on Canadian woods—25,000 measurements have been made—the methods of reducing the hygroscopicity of woods, the preparation of reference collection of microscopic slides of Canadian and other woods and studies of the anatomy of such woods; fungus bed tests of the resistance of Canadian timber to wood-destroying fungi; the decay of structural timber in buildings and its prevention; the decay of stored pulpwood and deterioration of stored pulp and their prevention; the relation of the relative humidity and temperature to the moisture content of woods—this last-mentioned work is carried out ,as mentioned above, in co-operation with the division of pulp and paper.

Thirdly, there is the division of Timber Tests, in which the research work is concerned with the mechanical properties of timber. Mr. C. J. Chaplin is the head of this division, the main lines of research work in which include the strength functions and certain related properties of Canadian woods—twenty-two species have been tested to date, involving many thousands of determinations—; the strength functions of Nova Scotia mine timbers, including studies and tests on the seasoning of mine timbers (six species); British Guiana woods as substituted for black walnut for rifle stocks in relation to their strength functions and other properties; the efficiency of newsprint splices—this last-named work is carried on, as mentioned above, in co-operation with the division of pulp and paper. The mechanical tests made are static bending, impact bending, compressed parallel, compressed perpendicular, hardness, shear, cleavage and tension tests. The physical tests made are shrinkage, moisture determination and structural characteristics tests.

Finally, there is the division of Wood Preservation, of which Mr. J. A. Coderre is the head. Here the main lines of work, which is concerned with research into the preservative treatment of timber by impregnation with chemicals, consist of the creosote treatment of Jack Pine and eastern hemlock railway cross-ties, with service test in the C.P.R. tracks; seasoning study on Jack Pine and eastern hemlock for railway cross-ties; field survey of railway cross-ties in Canada; the preservative treatment of Russian poplar for fence posts in the Prairie provinces; Canadian red pine for treated wood-paving blocks; seasoning study on birch, beech and maple for railway cross-ties; creosote treatment of birch, beech and maple for railway cross-ties.

Further important extra divisional miscellaneous investigations are carried on. These include investigations into the following: Substitutes for acetone as a solvent in the manufacture of cordite; potash from wood ashes; Canadian wood oils for ore flotation; and the utilization of decayed aspen.

Mention should be made of the excellent reference library which may be described as the very heart of the institution. It is a technical reference library, dealing with the technology of wood and forest products. It represents the result of seven years' discriminating collection on the part of the technical staff. There is certainly nothing like it elsewhere in Canada. It is particularly strong in information connected with the Pulp and Paper division. All periodicals of any value are taken, and this, in conjunction with the excellence of its technical works of reference, renders the institution in a position to furnish valuable information on current pulp and paper problems. It is probable that the completeness of this library's equipment is not as widely realized as it should be or its assistance would be more largely sought than appears to be the case.

The institution, since its inception in the fall of 1914, has published about 75 technical articles in the form of government bulletins and articles in technical journals. These articles are written exclusively by members of its technical staff.

The condition of the present buildings, in which the institution is housed, is far from good, if, indeed, it has not actually reached the danger point. The question of a provision of more suitable accommodation is under consideration, but no definite arrangement therefor has yet been made.

To return to the Pulp and Paper division: This is primarily concerned with research work in connection with the native trees of Canada as regards the question of their value and suitability for the pulp and paper industry. This division is further divided into two sub-divisions, one of which is purely chemical and engages in research work into the chemical properties of woods, while the other exists for the specific purpose of investigating mill problems, and carrying out preliminary trials on new species of wood and other raw materials.

With regard to the first of these sub-divisions—the purely chemical—the investigations that are being carried on therein at present are of a preliminary character with the object of determining the methods of analysis which will give the most consistent results in the analysis of wood. This work of determining the methods of analysis has now been practically completed, and the relation of the chemical composition to the rate of growth in the case of white spruce is being approached. It should be obvious that if such a relation is established, it will have a very definite and important bearing on the whole problem of reforestation. The investigation in question is directed to the relation between the rate of growth and the chemical composition in the wood, and particularly to the question of whether it is worth while, having regard to the cellulose content, to encourage the development of fast-growing trees.

Much of the work in the Pulp and Paper division is, of necessity, largely chemical, for example the work done in connection with researches on bleaching. Many small investigations are carried out in the laboratory of this division. A good deal of paper analysis is also done here and this branch of the work is being developed. The laboratory is equipped with three small autoclaves, for the purpose of investigating the effect of variation in the cooking relations of sulphite pulp.

That sub-division of the Pulp and Paper division that exists for the purpose of investigating mill problems, and carrying out preliminary trials on new species of wood and other raw materials, will, in time, include in its equipment, a complete mill, comprising grinders, chippers, screens, digesters, beaters and a paper machine. At the present time there is installed a Pusey and Jones 30-inch trim machine. The mill has been idle for four years or so, but it is now starting again and will be running continuously from now on. Its maximum output capacity will be about one ton a day. But, of course, with an experimental machine, it is just a question of putting a batch through and then shutting down again, and not of running full blast all the time. In its output, the Forest Products Laboratories intended to confine itself rather to the higher grades of paper not manufactured in Canada to any great extent. But, of course, the paper machine itself is really only of secondary importance, and is used rather for the purpose of carrying out pulping trials to their definite and appropriate end in the finished product than for any other reason. This department is admirably fitted to carry out research work on beating, and by carrying the work through can get a definite result on beating in the finished article. Indeed, the big field for the Pulp and Paper division lies in beating.

As regards equipment, there are in the paper mill two Marx beaters filled with lava stone and steel bar rolls. One of these is a double beater. Their maximum capacity is, approximately, 50 and 100 lbs. respectively of air-dried pulp. It should be said, in connection with these beaters, that the motors on them have a switch board containing ammeters, volt meters and watt meters, so that the power consumption may be accurately determined. The sizing apparatus, in the form of the DeCew-Erfurt sizing system, is very complete. There is a Packer screen and the other equipment includes a Noble and Wood Baby Jordan. It has been mentioned that the paper machine is a Pusey and Jones 30-inch trim. This is run by a 12-horse power induction motor through a Reeves drive on to cone pulleys. The motor itself is wired up for two speeds. The writer's thanks are due to Mr. E. P. Cameron, associate chemist in the Pulp and Paper division for his kindness in taking him over the division very thoroughly.

What has been written may suffice to show that the Forest Products Laboratories is engaged in scientific and industrial research and technical service work of great importance—work which is bound to expand, with increasing usefulness to those concerned with woods and the products manufactured or derived therefrom, if only it receives adequate financial encouragement and assistance from the State. It should be added that the institution has a branch at Vancouver. At present, this is practically a division of Timber Tests, with a staff of four exclusively devoted to such work.

RUE HEADS PAPER DIVISION.

John D. Rue, Ph.D., formerly Professor of Industrial Chemistry at the University of Michigan and captain in the Ordnance Dept. of the United States Army has been won from the Mead Research Corp, by the Forest Products Laboratory at Madison, Wis., as head of the Pulp and Paper Division. Dr. Rue succeeds Wr. Otto Kress and we wish him all success.

The Grand'Mere baseball team opened the season last Sunday at the Laurentide A.A.A. park by a 6 to 2 victory over the Three Rivers team in a well-played and interesting game.

"Not All is Gold that Glitters"

If every employee could realize the amount of energy and worry that is exacted from the management of a business to provide jobs through the week and pay envelopes on Saturday, there would not be many who would refer to profits as a form of robbery. The two sides of this question are so well brought out in a letter to the Orillia, Ont. "Packet" and the reply of the Editor of that paper that we reprint both in full. No doubt this is the attitude of many an honest workman.

PROFITS IN PAPER.

Orillia, March 28, 1921.

Editor of the "Packet".

Dear Sir,—In the Toronto "Globe," issue of the 24th instant, I have noticed the following item, which I believe, should receive further publicity and comment. "A Canadian paper-making company last year on total sales of ten and a half million dollars made profits of over five millions."

Is this not a glaring illustration, Mr. Editor, of what capitalists will do? And do you not think that it is time that not only Labour, but the masses in general, should rise up in protest? And do you not think that it is time to lift the blame from labour for all the evils of high prices? The paper making companies are not the only ones either, that are sapping the very life out of the nation. The financial reports of concerns, manufacturing food, clothing, furniture, and the very necessities of Canadian life, often show a marked comparison in the way of such robbery.

"Production and more production" has been the slogan as a solution for our many difficulties and high prices and yet our government will sit back and allow 50 per cent. of the selling price of paper to go into the pockets of shareholders for not even turning their hand in the way of production. Five million dollars will support a lot of people in idleness, and yet they are generally the ones who shout for "more production" and are the first ones to grumble about the high wages that are demanded by productive workers.

Some will say that Labour as a party, should not go into politics. But how in the world are people going to live respectable and healthy lives while being robbed of unreasonable proportions of what they produce? And is it logical to expect men who are receiving these huge profits to legislate and make laws that will hamper the continual flow of their own unearned income? Yet our Parliaments certainly consist of a majority of this class. Otherwise these huge profits would not be allowed. I think, Sir, it is time we changed the slogan to "more public ownership."

The advocate of private ownership would no doubt come back at us with an illustration of the deficits of our public owned railroads. But if we are not blind we could see that these same railroads would not have become publicly owned had they not showed deficits under private ownership. Furthermore, there are hundreds of millions of dollars that was formerly spent on railroad traffic which is now going to the automobile manufacturers, and gasoline merchants, which lessen the earnings of the said railroads to a great extent.

Far too much of our time is spent for the earning of profits for some one who may be living in Montreal, Winnipeg, Atlantic City, loafing in their lives, and being of no earthly good in the least, social butterflies so to speak, but still it would insult a real butterfly if it heard me compare him with such do-nothings, for a butterfly will exert itself enough to hunt its own food, while hosts of able bodied human beings refuse to even drive their own car, or whisk their own clothes, the results of profits.

Robbery, in Canada is supposed to be a criminal offense, yet in may cases, such as the above mentioned, it seems to be a virtue instead of a crime. Profiteering, should and must be stopped, sooner or later, and your valuable paper would, I think, serve no better purpose than to urge upon the people to unite in war against it. The leafer, be he rich or poor, must be given a wide birth in Canada if we expect to become a healthy, prosperous people.

The profit-monger is the cancer that is eating the very vitals out of the nation. He raises the cry that high wages forces him to raise the price of his products, yet at the end of the year he boasts of millions of dollars profits. And if you notice, nearly every succeeding yearly report is a record in profits, more especially in the key industries such as, flour milling, textiles, canneries, boots and shoes etc., products of which are vital necessities to all people.

Is it fair, Mr. Editor, to the employer who is trying to do the square thing by his employees, to have his men coming at him every little while for a raise in wages? Does it seem just, that he should be forced to increase his pay roll and oftimes suffer a loss in the filling of a contract which he may have made to supply his products at a close price? Quite generally the employees are blamed for making the demands. Yet when the necessaries of life are at stake, and when we consider the obligation that every man is under, to himself, his family, and the community, would he not be a coward if he failed to take action one way or other? Nevertheless the profiteer is really to blame, really at the root of the trouble and friction which often exists between employers and employees.

Political action is necessary in the extreme, and in my opinion a commission, composed of honest men, with authority to investigate costs of production and to regulate profits, would work wonders to the benefit of the nation. Capitalists would no doubt say that it would hamper the prospects of investments into industry, and that such a scheme would retard the growth of Canada into an industrial nation. But really I am sure the country would be far better off without the capitalist who is in search of profits only.

Yours truly,

FACTORY HAND.

(NOTE.—Since our friend, whom we know to be a good fellow, who is always fair to his own employer, appeals to the "Packet," we venture to point out to him that he has overlooked some important considerations. The Company referred to in the "Globe's" paragraph is doubtless the Abitibi Power and Paper Company. If so, it should be mentioned that against the gross earnings of five million dollars are to be set various items of interest, depreciation, etc., which reduced the net profits to a point where the Directors did not feel justified in declaring a quarterly dividend of more than 4 per cent. One of these unpaid items is business profits tax to be paid the Government, estimated at over a million dollars. If the "Globe" did not mention these facts it is only an illustration of how newspapers foment unrest by telling half truths. Doubtless the Company is putting aside something for a "rainy day," but this is good business for companies as well as individuals. Paper companies have not always paid dividends.

2.—While the high price of paper has been hard on newspaper publishers, (this is perhaps the reason for the "Globe's" attitude) and has added to the cost of newspapers to the public, it has on the whole been of tremendous advantage to Canada. 85 p.c. of the total Canadian production of newsprint is exported. This means that Canada gets a big price for this 85 per cent and the Canadian public has to pay high prices for only 15 p.c. Canada's export of pulp and paper during the past year amounted to the enormous total of over 150 million dollars. Had it not been for this the situation with regard to American exchange would have been much worse than it has been, resulting in higher prices for coal and other commodities imported from the United States.

3.—Far from pampering the people with large incomes, the Government is making them turn over a large part of their profits to pay the country's war burdens. In addition to the $1,200,000 business profits tax mentioned above, all the shareholders will have to pay income tax. And the higher the income the higher the tax. Thus a married man with an income of $3,000 has to pay only $40 income tax, or 4 per cent. on $1,000. But one with an income of $10,000 has to pay $619.50, or 20 per cent.; on $100,000 it is $32,749.50, or nearly 33 per cent.; and on $500,000 it is $318,349.50, or over 63 per cent. In addition to this, incomes from business dividends are now liable to municipal income taxes. So that it will be seen that, on the whole, the country is sharing very substantially in the profits of the paper industry.

4.—The situation in connection with the paper industry is abnormal. The supply in the United States has been far below the demand. As pulp and paper mills cannot be built in a day, or a year, this will continue to be the case for some time. The result is high prices. If the Canadian manufacturers didn't get the profits American middlemen would, as they did when there was a shortage of coal. Meantime the Canadian working men and manufacturers engaged in the paper industry, the shareholders in paper companies and the Government and people of Canada generally are profiting by the situation in the United States. The chief sufferers are the publishers of newspapers, who have been unable to recoup themselves for the enormous increase in costs. But we don't see why the workingmen should be exercised over a situation which means work for many of them, at good wages, and big revenue for the Government.

5.—Does not most of the trouble at the present time arise from the fact that there are many industries that are not paying dividends? The same paper that told of the Abitibi Power and Paper Company's big profits, announced that the Ames-Holden McCready Co., whose shoe factory was closed for more than six months, had gone behind $1,462,414 last year. Would it not have been better for everybody if the Company had made a million and a half, instead of losing it, and had kept its men employed all the year? The men would have had their wages, the Government would have collected a large profits tax, and the shareholders would have had dividends to spend. The "Packet" heard the other day of a Company whose factory was shut down and who has been losing $10,000 a week. Would it not be better for his men if they were working, and their employer was making $10,000 a week? Most of the money thus accumulated (which isn't taken by the Government) finds its way back into industry. Only a comparatively small proportion is spent on personal luxury. For those who do waste their incomes in idleness and extravagance the "Packet" has not a word to say.

6.—Another thing, if, as our correspondent suggests, profits are to be restricted when an industry is flourishing, who is to pay the losses in dull times?

We have gone into the points raised in our friend's letter at some length because we feel that the attitude he takes is not uncommon, and has much to do with the present business depression. Capitalists naturally hesitate to embark on new enterprises while there is so much unrest and uncertainty. The tremendous demand for municipal and Government bonds indicates that they are putting their money where they will be sure of dividends and free from criticism. But such a course, if generally followed would be fatal to the industrial progress and prosperity of the Dominion.—(Editor "The Packet".)

MATTAGAMI HAD A PROFITABLE YEAR.

Toronto, May 16. — One of the newer enterprises, the Mattagami Pulp and Paper Co., has issued its first report on operations covering the seven months ended December 31, 1920. No dividends have yet been paid, and the company has made a liberal allowance of $346,352 for losses from operations during the construction period and for depreciation of inventories, leaving a balance carried forward of $188,068. Net profits from operations were $1,091,779, from which was deducted $187,423 for interest on bonds, debentures and bank loans and $369,934, for depreciation and other reserves, leaving net earnings after interest and depreciation of $534,421.

The company's plant at Smooth Rock Falls, Ont., comprising mill, water power development and townsite was completed during the year to a balanced production of 45,000 tons of easy bleaching sulphite pulp per annum.

"Due to the necessity of carrying on construction during the year and the handicap of high labor and material costs," says president Duncan Chisholm, "your company was unable to participate fully in the extremely profitable market during the summer months. The operations for the year, however, have resulted in a substantial profit, and by utilizing same your directors have been able to place your company in a most efficient operating position, with inventories, logging operations, etc., written into the balance sheet at most conservative figures."

It is the opinion of the president that the present dull market condition for all grades of pulp is but temporary, but as it is not advisable to store large quantities of pulp for which there is no market immediately available, the operation of the plant has been suspended until the market revives.

PAPER SPECIFICATION — 1683.

Extract from historical notes of a work called "The Art of Paper Making", written in French by Augustin Blanchet in 1683.

For the paper perfectly to suit my use, it must also be white, it must not contain any shameful impurities, no bad wrinkles must furrow it, and no audacious unevenness must appear on its surface, but the pen must run over the whole of it without any obstacles, and by its snowy whiteness it makes the black lines it bears appear blacker to the reader, although the ink used is always the same.

PULP PRODUCTION IN THE U. S. IN MARCH.

The following is a tabulation by the Federal Trade Commission of the production, and stocks of finished pulp, in tons of 2,000 pounds on an air-dry basis, for March, 1921, compared with March, 1920, for the operating mills:

	Number of mills	On hand first of month	Production for month	On hand end of month
Ground Wood Pulp:				
March, 1921..	166	155,997	142,850	182,027
March, 1920..	167	105,574	139,667	109,288
Sulphite News Grade:				
March, 1921..	62	22,728	55,370	24,628
March, 1920..	63	18,896	72,904	18,543
Sulphite, Bleached:				
March, 1921..	31	13,229	25,057	14,147
March, 1920..	33	6,210	46,643	6,682
Sulphite, Easy Bleaching:				
March, 1921..	8	1,774	5,968	918
March, 1920..	8	941	5,392	873
Sulphite, Mitscherlich:				
March, 1921..	7	3,990	3,467	2,834
March, 1920..	7	1,560	7,008	1,677
Sulphate Pulp:				
March, 1921..	19	3,354	7,892	8,067
March, 1920..	21	4,808	18,759	5,146
Soda Pulp:				
March, 1921..	26	9,378	21,116	9,742
March, 1920..	27	3,282	36,031	3,538
Other than Wood Pulp:				
March, 1921..	4	156	612	155
March, 1920..	4	157	739	117
Total—for all grades:				
March, 1921..	—	216,606	262,332	242,516
March, 1920..	—	141,428	327,143	145,864
3 yr. March aver.	—	....	303,912	180,880

Total stocks of all grades of pulp in the mills on March 31, amounted to 242,516 tons. Mill stocks of ground wood pulp, news grade sulphite, bleached sulphite, and soda pulp increased during the month.

Ratio of Stocks to Average Production.

Comparing the stocks on hand at the domestic pulp mills at the end of the month with their average daily production based on the reports covering the years 1917, 1918, 1919 and 1920, the figures show that:

Ground wood pulp stocks equal slightly more than 39 days average output.

News grade sulphite mill stocks equal slightly less than 10 days average output.

Bleached sulphite mill stocks equal slightly more than 8 days average output.

Easy bleaching sulphite mill stocks equal about 4 days average output.

Mitscherlich sulphite mill stocks equal 11 days average output.

Sulphate mill stocks equal slightly more than 15 days average output.

Soda Pulp mill stocks equal slightly less than 8 days average output.

Mill stocks of "other than wood pulp" equal about 4 days average output.

Total mill stocks of all grades equal slightly less than 22 days average output.

Loss of production, amounting to 224,699 grinder—or digester—hours in March 1921 as compared with 158,462 for March 1920, was due largely to lack of orders, which amounted to 128,045 hours. Output was well maintained in spite of this fact.

Wall paper concerns had 4 tons less on hand April 1 than on March 1, though that figure for 1921 is about 4,000 tons greater than for 1920. Stocks of finished paper decreased by 2,130 tons during the month, to a figure that is less than for the past two years.

JAPANESE PULP AND PAPER EXPERT ON A VISIT HERE.

Iroquois Falls had a visit recently from a very distinguished Japanese business man, J. Kobayashi, who spent a day with H. G. Schanche, of the Forestry Department, and in a trip through the Groundwood and Sulphite mills.

He is a representative of a large pulp and paper company in Japan who are studying methods in vogue in this continent. He says that the bulk of the pulp used in Japan is imported, but that a certain amount of spruce is grown there, and the pulp and paper companies are doing all they can to encourage its growth. The machinery used in the Japanese mills is the most up-to-date English and American machinery, and with the knowledge gained of methods here, Mr. Kobayashi and his confreres in Japan hope to be able to utilize what spruce they have and also other woods, in the manufacture of pulp and paper.

WANT CALENDARS AND PAPER.

A well-known South African stationery house with head-quarters in Cape Town desire to negotiate with a Canadian publisher of calendars for trade purposes. Samples, prices, and full particulars desired with first letter.

A Cape Town commission house, trading throughout the Union territory, desire to get into touch with Canadian manufacturers of kraft paper, pulp boards, and show boards, the latter for cardboard box-making. Fullest particulars desired with first letter.

These are Inquiries 3059 and 3060 of the Dept. of Trade & Commerce, Ottawa.

FOREST PRODUCTS MADE GOOD PAPER.

Tuesday was distinctly visitors day at the Forest Products Laboratory on University Street, Montreal. Escorted by Supt. Kynock and his staff, the Montreal Division of Graphic Arts and the Montreal Paper Club visited all the departments and saw the excellent equipment and interesting work which the laboratory is prepared for carrying on. Between 150 and 200 guests were entertained during the day. A feature of the visit was the actual manufacture of paper on the experimental machine which turned out a very creditable sheet. It is interesting to note that the pulp was some of the standard unbleached sulphite which was obtained from the Riordon Company five years ago and has since been stored at the laboratory. A more complete description of the laboratory is given on another page.

WHAT'S THE DIFFERENCE?

Sambo (calling from jail window): "Hey, man what time is it?"

Jumbo (looking at his watch and then replacing it: "What's the difference? You ain't goin' nowhere."

Mr. Foreman, if you allow your department to get into such a condition that some of your men get hurt, or perhaps lose a leg, eye, hand or foot, or perhaps their lives, who is to blame? Where does the responsibility rest? Think this over.

Technical Section

REVIEW OF RECENT LITERATURE.

A-15; L-0. Production of Oxycellulose Free from Saline Matter. Ger. patent No. 314,311, R. ADLER, Vienna, Jan. 9, 1914. **J. Soc. Chem. Ind.**, xxxix, 60A (Jan. 31, 1920). Salts of oxycellulose are mixed with an inert solvent, such as MeOH or EtOH, Et or amyl acetate, or acetone, and then treated with an acid of which the corresponding metallic salt is soluble in the solvent used; the free oxy cellulose is then washed with more of the solvent and dried at a low temperature. The dried product forms a hard transparent mass which is completely soluble in alkalis and can be used for the preparation of cellulose solutions.—A. P.-C.

E-2; F-2. Dry Distillation of Soda or Sulphite Waste Liquors. Ger. patent No. 513,607, E. L. RINMAN, Stockholm, Sept. 1, 1915. **J. Soc. Chem. Ind.**, xxxix, 15-16A (Jan. 15, 1920). The use of milk of lime instead of finely powdered CaO or $Ca(OH)_2$ results in a 30 per cent increase in the yield of acetone. Soda waste liquor, for example, is concentrated to 30° Be. (sp. gr. 1.26) and mixed with a quantity of milk of lime corresponding to 400 kg. CaO per 1,000 kg. of wood. The mixture is concentrated to 55° Bé. (sp. gr. 1.62) and then distilled with superheated steam, the temperature being slowly raised to 500° Cent. The yield is about 40 kg. of acetone and 50 kg. of oil per 1,000 kg. of wood. —A. P.-C.

E-2. Substitute for Turkey-red Oil from Pulp Waste Liquor. Ger. patent No. 310,541, Chem. Fabr. Florsheim. H. NOERDLINGER, Florsheim, Dec. 19, 1915. **J. Soc. Chem. Ind.**, xxxix, 164A (Feb. 28, 1920). The so called "liquid resin" obtained as a waste product in the production of pulp from pine wood, is distilled under reduced pressure. The distillate contains an oil and a solid acid resembling a fatty oil and abietic acid. After the separation of any crystallizable constituents, the distillate is sulphonated with H_2SO_4. The resulting sulphonic acids, which are almost completely soluble in water, give solutions which can be rendered almost neutral, but complete neutralization gives rise to semi-solid or gelatinous soaps. The solutions form convenient media for the emulsification of all kinds of oils, fats and organic liquids generally, with water; they can also be applied in the textile industry for mordanting, dressing, and other purposes, and the production of emulsified lublicants and of disinfectants. —A. P.-C.

E-5. Manufacture of Pulp from Wood or other Cellulosic Material. Ger. patent No. 304,214, ZELLSTOFFABRIK WALDHOF, and H. CLEMM, Mannheim and R. WILLSTATTER, Munich, Oct. 20, 1916. **J. Soc. Chem. Ind.**, xxxix. 60A (Jan. 31, 1920). The material is treated with liquid or gaseous reagents at a comparatively moderate temperature, but at a greatly increased pressure created not entirely by heating the liquid, but largely by forcing in liquid or gas. The digestion may be carried out under a pressure of 50 atmospheres in order to obtain a good penetration of coarser material and a more complete digestion. The avoidance of high temperatures while maintaining all the advantages of high pressure gives a cellulose fiber in a better state of preservation than by the usual process, and the constituents of the spent liquors are less profoundly decomposed, so that the by-products may be more advantageously utilized. The process may also be employed in the saccharification of cellulose. A. P.-C.

F-0. Wood Cellulose as a Substitute for Cotton. Ger. patent No. 306,366, W. SCHACHT, Weissenfels, March 14, 1918. **J. Soc. Chem. Ind.**, xxxix, 60A (Jan. 31, 1920). Woodpulp prepared by any of the alkaline processes is further digested by boiling with a sulphite solution. The gelatinous substances (hemicelluloses) which are present in soda woodpulps are removed by the sulphite treatment, and a highly purified cellulose is obtained, suitable for use as a substitute for cotton in the chemical and papermaking industries. A.-P.C.

K-2; K-18. Utilization of the Spent Lime Liquors from Straw Paper and Strawboard Mills. Ger. patent No. 314,054, R. ADAM, Bremen, March 23, 1917. **J. Soc. Chem. Ind.**, xxxix, 60A (Jan. 31, 1920). The spent liquor separated from the straw pulp by mechanical means, is evaporated, dried, and the residue subjected to destructive distillation. The products resemble those from the distillation of wood and comprise acetone and MeOH.—A. P.-C.

K-7. Continuous Beating and Refining Engine. Br. patent No. 135,733, T. H. NASH, St. Paul's Cray, March 15, 1919. **J. Soc. Chem. Ind.**, xxxix, 60A (Jan. 31, 1920). A series of beating rolls is mounted in a common trough, the bottom of which is so constructed that the pulp and the like gradually ascends whilst passing under the rolls, and is thereafter returned by pipes or ducts passing through or beneath the bottom, to an opening in the wood plate, by means of which the stream of pulp passing from the feed plate may be narrowed, thereby causing the pulp to pass under the rolls a greater number of times.—A.P.-C.

K-8. Coloring Paper Pulp with Sulphur Dyestuff (thiophor dyestuffs). Ger. patent No. 298,826. C. JAGER, G.m.b.H., Dusseldorf, March 17, 1916. **J. Soc. Chem. Ind.**, xxxix, 60A (Jan. 31, 1920). A collodial suspension of a sulphur dyestuff, which may be prepared by boiling the dyestuff with Turkey-red oil, or "monopol oil", is reduced by an alkaline solution of hydrosulphite, and the leuco compound, so obtained is added to the pulp in the course of manufacture; it has a strong affinity for the pulp and the coloring reoxidation and fixation takes place in the cold, the pulp being sized at the same time. If H_2O_2 be used as the oxidizing agent and $Al_2(SO_4)_3$ as the fixing agent, very brilliant shades are obtained. A. P.-C.

K-10. Process of Sizing Paper. Ger. patent No. 314,146. H. WANDROWSKY, Berlin, Nov. 30, 1917. **J. Soc. Chem. Ind.**, xxxix, 60A (Jan. 31, 1920). Sizing is effected by means of the natural resins present in the pulp by adding substances having an alkaline reaction to the pulp during the beating in order to convert the resin into a resinate, which is then precipitated on the fibers by $Al_2\ SO_4)_3$.—A. P.-C.

K-10. New Sizing agent for Paper.—Ger. patent No. 303,925, Holzverkohlungs-Ind., A.-G., KONSTANZ, Feb. 24, 1916. **J. Soc. Chem. Ind.**, xxxix, 60A (Jan. 31, 1920). Alkaline solutions or suspensions containing products of the condensation of tar and aldehydes in the presence of alkalis are added to the paper pulp, and the sizing constituent is precipitated by substances with an acid reaction. Example: Beechwood tar is freed from acetic and other acid substances and then condensed with formaldehyde in the presence of alkali. The quantity of formaldehyde is so chosen that it is not sufficient to condense the whole of the tar constituents. Paper can be satisfactorily sized with 1 per cent of the product. The product may also be mixed with bakelite resins soluble in alkalis.—A. P.-C.

K-10. Paper Size. U. S. patent No. 1,317,616, J. A. DE CEW, Montreal, Canada, Sept. 30, 1919. **J. Soc. Chem. Ind.**, xxxix, 103A (Feb. 16, 1920). Rosin soap containing over 25 per cent of free rosin is diluted and then discharged into a cold solution of sodium silicate until the total dilution corresponds approximately to 2 per cent of total solids. (See also Fr. patent No. 499,415, **Papeterie**, xlii, 269-70, March 25, 1920; **Pulp & Paper** xviii, 756, July 15, 1920.)—A. P.-C.

K-10; K-23. Waterproofing process. U. S. patent No. 1,317,618, J. A. DECEW, Montreal, Canada, Sept. 30, 1919. **J. Soc. Chem. Ind.**, xxxix, 103A (Feb. 16, 1920) Waterproof paper is made by incorporating with the paper stock a sizing agent, a precipitating mixture of wax, rosin, and alumina, then drying the product and heating to the fusing point of the sizing mixture.—A. P.-C.

K-10. Process of Treating Paper Size. U. S. patent No. 1,317,619, J. A. DECEW, Montreal, Canada, Sept. 30, 1919. **J. Soc. Chem. Ind.**, xxxix, 103A (Feb. 16, 1920). A sufficient quantity of alkali is added to the paper stock in the beaters or mixers so that the concentration of the basic ions will prevent the formation of alkaline-earth resinates by the salts existing in solution; a resin size is then added and precipitated by $Al_2(SO_4)_3$.—A. P.-C.

K-11. Arrangement for Ensuring the Movement of Fourdrinier Guide Rollers. Ger. patent No 308,372, FARBW. VORM. MEISTER, LUCIUS und BRUNING, Hoechst, May 12, 1916. **J. Soc. Chem. Ind.**, xxxix 153A (Feb. 28, 1920). The guide rollers are provided with rings of elastic material such as rubber or felt, which press lightly into the wire and ensure their sympathetic movement, thereby preventing friction and rapid wear due to the usual tendency of the rollers to remain stationary.—A. P.-C.

K-11. Arrangement for Drying Paper, etc., in Continuous Strips. Ger. patent No. 309,543, H. MALLICKH, Gross-Sarchen, Feb. 16, 1917. **J. Soc. Chem. Ind.**, xxxix, 153A (Feb. 28, 1920). The bands of paper or other material are passed over steamheated cylinders and at the same time subjected to a blast of air of a different temperature from the cylinder. By arranging the drier in several sections filled with air at different temperatures, it is possible to introduce into any section the air issuing from a previous section.—A. P.-C.

K-14. Process and Apparatus for Seasoning and Rectifying Paper-stock. U.S. patent No. 1,325,044, C. E. POGGEL, Louisville, Ky., U.S.A., Dec. 16, 1919. **J. Soc. Chem. Ind.**, xxxix, 153A (Feb. 28, 1920). A process of seasoning and rectifying paper-stock consists in blowing currents of heated air upwards between the sheets which are suspended within an enclosure. After passage between the sheets the air is again made to travel in the same cycle.—A. P.-C.

K-18. Manufacture of Light Weight Millboards from Tree Barks. Ger. patent No. 305,697, O. ZIMMERMAN, Berlin-Lichterfelde, Aug. 16, 1917. **J. Soc. Chem. Ind.**, xxxix, 59A (Jan. 31, 1920). Tree bark is ground in a kind of bone mill, beaten in a hollander, and delivered to a strainer, from which the beaten stuff, diluted with water passes to a millboard machine on which it is worked up as the middle layer of the finished board. The bark pulp has a certain coloring power for boards made of waste papers, and yields a board of low sp. gr.—A. P.-C.

K-23. Process for Impregnating Paper Fabrics. Ger. patent No. 307,771, GEBR. HEYL and Co., A.-G., Charlottenburg, Aug. 14, 1917. **J. Soc. Chem. Ind.**, xxxix, 104A (Feb. 16, 1920). The goods are impregnated with mixtures containing wood tar or wood tar oils and cellulose esters, particularly in combination with amyl acetate. The impregnated fabric may be used as a material for water buckets, tent covers, ground cloths, wagon sheets, etc.—A. P.-C.

K-0. Process for Rendering Absorbent Waste from Paper Industries. Ger. patent No. 307,611, REIS und CO., Friedrichsfeld, Feb. 20, 1918. **J. Soc. Chem. Ind.**, xxxix, 185A (Mar. 15, 1920). Addition to Ger. patent No. 303,302, **J. Soc. Chem. Ind.**, xxxix, 15A (Jan. 15, 1920). After the chemical treatment and before drying the waste is left a long time exposed to the action of the solution of the residue of softening reagent (alkali, etc.) remaining in the material. This gives a more permanent absorbent quality than if the softener is thoroughly washed out before drying.—A. P.-C.

L-4. Container Board Substitute for Cedar Wood. Br. patent No. 133,732, E. C. R. MARKS, London, assignee of Cedaroid Company, Inc., Rochester, N.Y., U. S. A., Sept. 11, 1918. **J. Soc. Chem. Ind.**, xxxix, 103A (Feb. 16, 1920). Same as Fr. patent No. 491,778. See **Chimie & Industrie** iii, 74 (Jan. 1920). **Pulp and Paper**, xviii, 757 (July 15, 1920).—A. P.-C.

L-7. Durable Textile Yarns from Paper. Ger. patent No. 313,520, M. MULLER, Limbach, and S. HERZBERG, Charlottenburg, Jan. 15, 1918. **J. Soc. Chem. Ind.** ,xxxix, 103A (Feb. 16, 1920). String, rope, etc., or the constituents used in preparing them, particularly materials composed of paper yarn, are coated with metal by the spraying process. The metal-coated textiles are distinguished by a high tensile strength and resistance to external influences.—A. P.-C.

L.-7. Textile Fiber from Wood. Ger. patent No. 305,141, K. MUTTER, Triptis, Nov. 11, 1917. **J. Soc. Chem. Ind.**, 102A (Feb. 16, 1920). The fibers are isolated only from the summer wood portions and the annual rings, which contain the strongest fibers. The annual rings are peeled off from the woody stem and are freed from the soft fiberless layers of the spring growth. The coherent layer of summer growth is treated chemically for the removal of the whole or part of the lignin and resins, and the resulting cellulose fibers are separated by mechanical treatment.—A.-P. C.

L-7. Waterproof Impregnation of Paper Textiles. Ger. patent No. 305,024, M. LINKE, Remscheid, June 26, 1917. **J. Soc. Chem. Ind.**, xxxix, 103A (Feb. 16, 1920). Paper fabrics or the stitched articles made from them are steeped in water until they show no further shrinkage, and are then treated, slightly damp or after drying, with an impregnating material which may be composed of chalk, lithopone, a binder consisting of an oil lacquer containing fatty matter and a thinner such as oil of turpentine or a substitute.—A. P.-C.

PULP AND PAPER NEWS

At a meeting of the Bookbinders' Union at Toronto last Sunday it was agreed that there should be a ten per cent. assessment of the wages of the membership of the union, retroactive to May 1, to meet any levy which may be necessary if there is a bookbinders' strike in this city on June 1, for a 44-hour week and increased pay. Other unions of the printing trades in Toronto have taken similar actions. It is said that negotiations looking for a possible satisfactory settlement of the question of wages and working hours may be under way this week.

The printers' strike in Peterboro terminated last Saturday with the adoption of a tentative agreement granting the job printers a forty-four hour week with a $30 a week scale. The news men will go back to work at 48 hours and an increase of $1.50 weekly, bringing their scale up to $31.50. The printers originally demanded an increase of $8 weekly. The strike lasted exactly two weeks. The new agreement will continue in effect for three years, but can be opened up each year for wage readjustment up or down, according to the cost of living.

Many forest fires, attributed to the exceptionally dry weather experienced lately, occurred last week in Northern Ontario.

The Hon. Phillippe J. Paradis, member of the Quebec Legislative Council, stated last week, on his return from a three months' trip to Europe that, when the German indemnity is paid, the lumber business in Canada will be greatly benefitted. There is, he states, millions of feet of Canadian lumber in England which the French want, but cannot purchase because of lack of funds. The French Government has promised to buy this as soon as the money is forthcoming and the result will be greatly increased orders from this country.

In returning to work the printers at Regina, Sask., receive the same hours rate of pay as previously. In job offices a 44-hour week, entailing a loss of four hours' pay a week over the former wages, will prevail, while the men in newspaper offices, who will continue at the 48-hour week, will receive the same pay as formerly.

Negotiations between the master printers and their employees in the job printing plants at Ottawa last week failed to reach an understanding as to new agreements to take the place of those expiring on June 1. President E. S. Lee, from the typographical union local, flatly refused to enter into any discussion on the question of the 44 hour week for job printers, and was then notified that further negotiations would be useless, as the Master Printers' Association was determined not to concede this demand of the union. Should the deadlock not be broken by June 1 and the strike occur, it will involve about 100 members of the union employed in the different job printing establishments of the capital.

The master printers of Hamilton, Ont., last Thursday declared for the open shop, and twenty employing printers advertised for men and will ignore the union printers who are on strike. About 300 men who have been employed as printers, pressmen and binders are affected. The employers claim that with prices falling the men are not justified in asking for a reduction in working hours from 48 hours a week to a 44 hour week at the same rate of pay as they have been receiving $35 a week. "Now that we have decided on an open shop there will be no delay in getting on with the work," one of the employing printers said tonight after the meeting. It was stated that only one employer at the meeting opposed the decision in favor of the open shop.

Mr. R. J. King, of Dayton, Ohio, was a visitor in Montreal this week in company with Mr. H. S. Taylor, of H. S. Taylor, Ltd.

Major A. M. Moffatt, President and Manager of the Shackleton Pulp and Lumber Company, which is operating a soldier's settlement scheme about fifty miles west of Cochrane, was in Toronto a few days ago on business connected with the marketing of the pulpwood being taken off the company's limits. In addition to the returned men who have taken up land in the township, the company has about thirty men employed and it is expected that when things get thoroughly organized about 15,000 cords of pulpwood a year will be handled. Several portable rossers are being put in and one will be installed very shortly. All told, the men up there have 6,000 acres laid aside for them. W. L. Bland is the woods manager of the company.

"Speed Up, There's no hard times coming, Its just soft times coming" is the cheering legend on a neat blotter sent out by E. A. Crippen, paper mill representative, King Street, West, Toronto.

The Doheny Pulp, Hardware and Lumber, Limited, with head office at Montreal, and a capital stock of $50,000, has been granted incorporation by the Dominion Government, with power to deal in Lumber, pulpwood, paper, etc. The incorporators are Johnny Lamothe, Philias Leveille and Joseph Paul Leveille, lumber merchants, and Joseph Napoleon Hudon, commercial traveller, all of Montreal. Another Dominion incorporation is that of the McCraney Lumber Company, Limited, with power among other things to carry on business as pulp mill owners. Among the incorporators are G. H. Long and F. R. Burton, lumber merchants of Hamilton, Ont., which is named as the head office. The capital stock is $40,000.

John Castell Hopkins is named as one of the provisional directors of the Canadian Review Company, Limited, which has just been granted a charter by the Ontario Provincial Secretary's Department, Toronto. The company is authorized to carry on a general printing and publishing business, the capital stock being $40,000 and head office, Toronto.

Paper lying too close against window and becoming ignited by the powerful rays of the sun, is blamed for a fire at A. L. Florence's paper warehouse in Ottawa on May 9th, causing damage estimated at $25,000. The fireproof structure of the building prevented serious spread of the flames.

Medical advices as to the effect of high water on Lake Timagami, occasioned by the Spanish River Pulp and Paper Mills Company's dam, was placed before the Timber Commission in Toronto the other day. It was stated that the dam had been built in secret by the company twenty years ago and it was claimed that the high water resulting had destroyed the shore line. Col. Gibson, vice president of the company, showed that what his company had done respecting the water levels of Cross Lake and Lake Timagami, had been occasioned by commercial necessities.

The will of the late Sir William Gage, head of the W. J. Gage Company, manufacturing stationers, Toronto, has been probated and amounts to $900,660. According to the will the well known manufacturer and philanthropist made many charitable bequests including gifts to the Toronto Free Hospital for Consumptives, the National Sanitorium Association and the Ina Grafton Homes. During the last seven years Sir William gave to charities approximately $375,000.

Mr. Scott, representing Hanson, Scott & Co., of London, Eng. who are big twine dealers, spent a few days recently in Toronto.

John MacLaurin, of the Ideal Coated Paper Company, of Brookfield, Mass., was a business visitor in Toronto last week.

Paper Sales, Limited, Yonge Street, Toronto, have been appointed agents for Ontario and Quebec of the Arabol Manufacturing Company, of New York, manufacturers of glues and gums used extensively in the paper box manufacture.

A. C. Thompson, of the Schofield Paper Company, St. Johns, N.B., was in Toronto a few days last week.

The William Hamilton Co., Limited, Peterborough, have recently completed the installation of the following equipment: two dryers, with 32 cylinders for sulphite at the Edmunsdon N.B. mill of Fraser Companies, Limited and six centrifigal screens for the same company, and two screens for Price Brothers & Co., Limited at Jonquiere, Que.

Mr. G. W. Pauline, of Ritchie & Ramsay, coated paper manufacturers, Wellington Street, Toronto, has returned from a trip through Michigan where he visited a large number of the paper concerns. He reports trade there as being very dull with no immediate prospect of improvement.

For the purpose of taking over as a going concern the business being conducted at Midland and Penetanguishene by Manley Chew, including all the Canadian and American patents, the Solidbord Company, Limited, has been granted an Ontario charter, with authority to manufacture fibre board or solidboard or any manufactured product from sawmill waste.

The capital stock of the Timiskaming Pulp and Paper Company, Limited, which has been organized to build a ground wood mill near Haileybury, has been increased from $500,000 to $1,000,000.

B. F. Avery of the Spanish River Pulp and Paper Mills, Limited, who with Col. Jones, the general manager, have been in Toronto during the past few days, states that approximately thirty plants are affected by the sulphite pulp and papermakers strike. Spanish River and Abitibi have about 3,000 men out and there seems no probability of an immediate settlement. The woods force of the Spanish River Company, however, will be kept working getting out pulpwood against the time of resumption.

Losing everything but the clothes in which they stood, and their motor car, which Mrs. Brown heroically drove out of the burning building, the four members of the family of R. Norman Brown, of Brown Bros., stationers, Toronto, barely escaped with their lives when their recently purchased summer residence at Jackson's Point was burned to the ground on Tuesday night of last week.

Arthur Partridge, at one time of the St. John. N.B. Globe, but more recently of the Worcester, Mass. Telegram and the Rochester Post Despatch, has been appointed Advertising Promotion Manager of the Canadian Daily Newspaper Association, the head office of which is located in Toronto.

The Republic Flow Meters Co., of Canada, Limited, Toronto, have sent out circulars to their customers announcing a change in the name of their organization which is now known as Dominion Flow Meter Co., Limited. The organization has been augmented and the original personnel retained. The design of equipment is in no way changed.

C. Howard Smith, President of the Howard Smith Paper Mills, Limited, Montreal, was in Toronto last week on business.

The first issue of a new monthly publication, "The Canadian Stationer and Book Trade Journal" has reached the Pulp and Paper Magazine. The periodical is being put out by Findlay I. Weaver, an experienced trade paper man who got his early experience in the printing and stationery business in Kitchener, Ont., and who, more recently, was editor of Bookseller and Stationer. The new journal, which is being published in the interests of the book, stationery and allied trades, has set a high standard typographically and in general get-up and the initial number contains a lot of valuable matter liberally illustrated. Under Mr. Weaver's editorship this latest venture into trade journalism should be a success.

308 TONS A DAY AT LAURENTIDE.

An average of 308 tons of newsprint daily for the month of April is the greatest output of paper in the history of the Laurentide Company in a similar period, according to the figures for the month, which have been recently compiled and published in the Digester. The new machines contributed 100 tons of this daily total on the average, doing the best they have done since their installation, while there was an increase of some 30 tons on the old machines over the March figures. The board machine turned out an average of 47.2 tons daily during the month.

Averages for 24 Hours—April 1921.

	Newsprint Machines		Board Machine
	2 to 7	8 and 9	
Capacity. . .	239.4	142.1	51.2
Production . .	208.5	100.2	37.2
Efficiency . . .	87.1%	70.4%	92.0%

After making an inspection trip through nine states and visiting many mills, a safety engineer reports that he found only one saw filer who thought enough of his eyes to wear goggles while working around emery wheels. Isn't easy now to understand why there are so many blind folks in this country?

UNITED STATES NOTES

Assertions by the union leaders to the effect that the mills just tied up had a total output of 4,000 tons of newsprint daily, were contradicted in a statement issued last Friday by the News Print Service Bureau. It was stated that the seven mills referred to produced only 1,280 tons of news print a day. All of the mills which shut on May 1 and 11 and April 19, produced, according to the bureau, 3,400 tons a day, which was said to be 40 per cent of the total output for the United States and Canada.

The third annual convention of the National Paper Box Manufacturers' Association was held at the Waldorf-Astoria Hotel, New York, last week. Desire to effect further price reductions without resorting to wage cutting was the dominant feeling at the sessions, and the majority of speeches concerned the means of attaining this end. Among the suggestions were a uniform cost system to cover the entire industry, various new labor saving devices, improved arrangement of work, and industrial training to increase the production of the individual employee. Reports read by members reflected a discouraging condition of the market. Apathy on the part of the buying public, it is said, had reduced sales to 50 per cent of normal, but this is 15 per cent above sales in February. Among the speakers were W. C. Carlson, president of the largest box concern in the country; B. C. Forbes, editor of Forbes Magazine; George F. Barber, president of the Barber Industrial Service Company, Percy S. Straus, of R. H. Macy & Co. Senator Lenroot of Wisconsin was the chief speaker at the closing banquet. Herman N. Hess was chosen president and F. B. Seigfried of Newark, Vice President of the Eastern District.

In its annual report for the year ended Dec. 31, 1921, the American Writing Paper Company shows net profits of $1,687,673 after all deductions equivalent to $7.66 a share on the $2,000,000 of capital stock. The profits were $435,095 in 1919. Gross profits were $5,112,395, as against $2,272,699 the previous year. With the exception of 1916, profits last year were the largest ever reported. President George A. Galliver said that conditions prevailing at the close of last year were fully reflected in the markets for raw materials and supplies as well as for paper. Actual inventories were taken of all paper finished and in process, raw materials and supplies. Inventories carried in the balance sheet aggregating $6,873,391. "The general situation in the paper industry," said Mr. Galliver, "is not yet clear, and predictions for the immediate future cannot safely be made. Production has not, however, materially increased and demand is increasing."

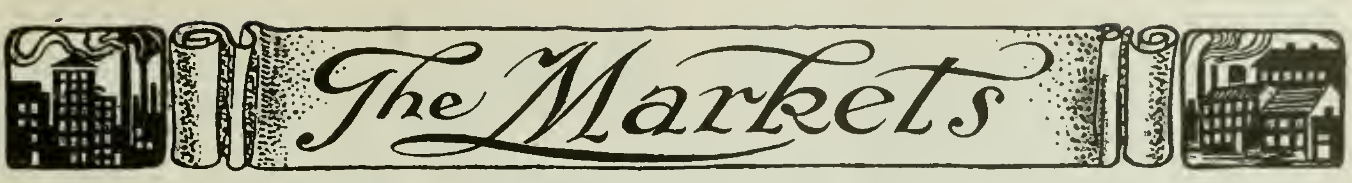
Commercial disputes coming up in future in Chicago may be kept out of the courts of law if a "trade court" recently established there by the Chicago Association of Commerce can bring about satisfactory adjustments of differences. The new commercial tribunal, the first of its kind established in America, will concern itself chiefly with infractions of a commercial nature, where fact is of more importance than details of the written law. It is modelled largely after similar institutions in Europe which are said to have served successfully in the adjudication of business disputes in continental countries. The first case was brought up in the "trade court" May 4. It had to do with a dispute over 2,000,000 folding cartons, which were ordered from the O. B. Andrews Company, of Chatanooga, Tenn., by the Universal Theatres concession Company, of Chicago, and which the latter firm refused to accept, because they were not according to the sample. Charles W. Bell, assistant secretary and N. E. Feller, a salesman, represented the O. B. Andrews Company at the hearing. Decision in the case was reserved. J. Kent Greene, formerly assistant to Chief Justice Olson, who acted as manager of the commercial arbitration bureau, presided at the hearing. Much interest in the procedure is being taken by Chicago business men.

A deal consummated at Monroe, Michigan last week brought about the consolidation of the Monroe Binder Board Company and the Boehme & Rauch Company. The concern, to be known as the Monroe Consolidated Paper Company, is capitalized at $7,500,000, of which amount $5,000,000 is common stock. E. C. Rauch, founder of the Boehme & Rauch Company, was elected president, and L. W. Leathers, Eugene C. Betz, J. C. Bullis, F. E. Williamson and H. L. Rauch, vice-presidents.

Proclamations designating the week of May 22 as Forest Protection Week were issued last week by President Harding and by Governor Miller of New York State. Governors of the various States are asked by the President to arrange educational and instructive exercises to place before the people the need for preventing unnecessary waste by forest fires. Governor Miller asked the people to "create universal appreciation of the worth and importance of our forest heritage."

W. B. Greeley, chief of the United States Forest Service, appeared before the House of Representatives' Territories Committee last Friday to urge the necessity of vigilantly protecting the pulpwood and power resources of Alaska to prevent reckless exploitation. He said that the Government's conservation and development program might be frustrated by passage of the Sutherland bill which would transfer to a commission of Alaskan residents many of the Governmental functions. He expressed his belief that the forests of Alaska provide a practical solution of the wood pulp problem.

The Commercial Advertiser Association, publishers of the New York "Globe," has begun a damage suit in the Federal courts against the International Paper Company, alleging loss of circulation and advertising, due to violation of the Sherman Anti-Trust Law by the defendant firm. The plaintiff charges that in 1915, 1916 and 1917 it lost amounts set at $500,000, by reason of the formation of a newsprint manufacturers' association in restraint of trade. The complaint states that the Commercial Advertiser Association had to buy paper from the company and names forty-three companies producing paper with which it alleges the plaintiff was not allowed to do business.



The Markets

CANADIAN TRADE CONDITIONS.

Toronto, May 14.—Speculation is rife as to the effect on the trade and the operating pulp and paper companies of the strike of pulp and paper makers in such mills as the Spanish River, Abitibi and St. Maurice companies and the concensus of opinion appears to be that the net standing of the companies will not be seriously affected because it is known that production was speeded up for some weeks ahead in anticipation of a strike contingency. The wide-spread strike among pulp and paper makers across the line is also spoken of by some as likely to have a favorable effect on the Canadian market as it will curtail supplies in the States and thus create further demand for the Canadian product. This, however, is contingent upon the extent to which the labor unrest extends in this country. While the industry as a whole is unsettled it is still prosperous as indicated by the statements of some of the leading companies such as Price Bros., this company having shown profits of $1,134,450 for the four months operations as against $2,055,782 for the previous full year. Current busines, both in pulp and paper is quiet and the market in paper is still on the down grade. Several lines of paper underwent a further decline in price last week, including coated paper, wrapping, tissues and toilets. There is little indication of the pulp market increasing in activity and few transactions are taking place, while stocks are increasing at the mills.

PULPWOOD.—Although pulpwood contractors are still buying wood, no prices have been established and there is practically no real market. A leading Toronto contractor, who has just returned from a trip to New York and Northern Pennsylvania says that he never saw the pulpwood situation in such an indefinite shape, either in the States or in Canada. In the two states he visited he did not find a single mill that was running full and many of them are closed entirely. In Canada very few mills are in the market for pulpwood, although some contractors, while doing a great deal less business than last year, have considerable orders booked for 1921-22 delivery, although the orders are being taken on the basis of a non-established market. Prices are down at least twenty-five per cent from those of a few months ago and while the pulpwood industry generally is dull there are signs that it is coming back. The contractor referred to above states that he looks for very much better business very shortly and predicts a spirited revival in trade as soon as the labor problem is settled and the market becomes firmly established again. Regarding the pulpwood situation in Quebec, it is stated that it is in strong hands, however, and that there is little danger of it being forced onto the market at a sacrifice. So far there has been no disposition on the part of those controlling the wood to force its sale, which is a matter of satisfaction to the dealers.

WRAPPING PAPERS.—With buyers of wrapping ordering 500 pounds whereas they used to order by the ton, and with a fairly free flow of small orders coming in the wrapping paper jobbers do not know just where they are at as regards business turnover, for while the orders are smaller there would appear to be a better margin of profit on the smaller orders than on the large. A fair amount of business is being done and when the total tonnage for the past few months is ascertained, it is thought that the wrapping paper trade will be found to have weathered the depression period very well. None of the jobbers are taking any chances in stocking up and the consumer is following the same policy, the result being that the mills are having a rather hard time disposing of their output. The light stocks being carried by the jobbers is indicated by the enquiries among the jobbers themselves for odd lots to fill up orders. Just as the jobbers get no protection in the buying of car lots so do the consumers hesitate about buying in anything but small lots in the present state of the market, which is a declining one. A cent a pound was knocked off the price of several lines last week. Grey brown wrap now sells at $5.50 in car lots, f.o.b. Toronto: white wrap 6 cents per pound and No. 3 manila $6.50. Fibres and kraft remain unchanged.

KRAFT.—The improvement in trade in this line, reported during the past few weeks, continues, and dealers and manufacturers are cheered at present conditions and future prospects. The trade generally feels that an era of better business is setting in and sales during the past few weeks have been increasing satisfactorily. Kraft paper is still quoted at 10c and kraft pulp at $80 per ton.

COATED PAPER.—Prices for coated paper at the present time are being fixed to suit the conditions and there is no stable market as far as prices are concerned. One mill dropped its price a cent a pound on May 1st and other mills either have made, or likely will make, a similar reduction. Although the coated paper mills have been enjoying a fairly prosperous season despite the paper trade depression, business is now fluctuating considerably and some of the mills report trade rather dull. A lot of enquiries, however, are coming in, and although they do not all result in business, the trade on the whole continues to hold its own very well.

TISSUES AND TOILETS.—The light weight paper market continues to decline, reductions being made a few days ago in both tissues and toilets. Toilets went down fifteen per cent and tissues underwent a slight reduction. The following prices for leading lines of tissue now prevail: No. 2 manila, 24x36-480, $1.30 per ream to jobbers in quantity—$1.75 for less than 50 reams: 20x30, 95 cents and $1.30; white cap or natural white tissue, 24x36-480, $1.50 and $2.00: 20x30, $1.05 and $1.40; No. 1 bleached white tissue, 24x36-480,$1.95 and $2.60: 20x30, $1.40 and $1.85: No. 1 manila or natural white sulphite tissue, 24x36-480, $1.75 and $2.35: 20x30, $1.20 and $1.60. All prices are f.o.b. paper delivery points and according to the rule adopted some time ago all quantities must be in one shipment to one party, at one time to one place.

RAG AND PAPER STOCK.—Paper manufacturers have continued uninterested in offerings of cotton cuttings and very little business is being done. The mills in the New England states have been quoting lower prices than dealers can possibly afford to sell at. Most mills state they have sufficient rags on hand to meet their immediate requirements, and remain uninterested in any offerings of respectable size. No. 1 shirt cuttings have been offered in some cases as low as 9 cents, but in most cases a half to a quarter of a cent more has been demanded by packers. Nothing has occurred to lift the gloom from the old cotton rag market. Transactions with mills have been few, and have not involved any large turnover of stocks, so that a few dealers in order turn over merchandise, have not been averse to granting some concessions. Dealers claim that prices are about as low as they can possibly get and the general opinion is that when mills are again purchasing, prices will have to go up on most grades. In this connection it is interesting to note that the United States Federal Trade Commission repors for March show 440.777 tons of paper, indicating that mills were operating at 76 per cent of this average for the past three years, and also showing the first upturn since production started to decline in that month.

WASTE PAPER.—The waste paper market has gained a little further in activity, particularly in mixed papers, and slightly in book stock, and it has gained considerably more in sentiment. In the first place dealers and packers cannot see how the market can go down much further. The amount of stock being packed has fallen off tremendously, and there is a great deal more stock being destroyed because of the low market price. It is stated that hundreds of tons of paper is being destroyed every day, most dealers refusing to pay anything whatever for ordinary scrap paper as the price being paid by the mills is so low that it is eaten up entirely by the cost of handling, cartage and freight. This is particularly true where the mills are some distance from the supply point and the freight rate is an important factor. Some of the American mills have increased their price for mixed papers two dollars and three dollars per ton during the last ten days. Dealers now feel that any buying action on the part of the mills will increase the price of all grades of waste paper quite a good deal. A few weeks of active operations by the mills will clean out the entire visible supply of waste papers, and unless the mills soon adopt a more intelligent policy of buying, the dealers say they will find that they will be the sufferers when they really require the goods. "The waste paper that is now being burnt and destroyed is lost forever," said a Toronto dealer, "and the mills have only themselves to blame if a revival of business finds them understocked and forced to pay increased prices for material."

The following prices for rags and waste papers are reported:—

	Per Cwt. f.o.b. Toronto.
No. 1 shirt cuttings	$8.75— 9.50
No. 1 unbleached cotton cuttings	5.50— 6.00
No. 1 fancy shirt cuttings	6.00— 6.50
No. 1 blue overall cuttings	6.00— 7.00
Bleached shoe clip	8.00— 8.50
White cotton hosiery cuttings	8.75— 9.50
Light colored hosiery cuttings	9.00—10.00
New Light flannellette cuttings	8.00— 8.25
No. 2 white shirt cuttings	5.50— 6.00
City thirds and blues (repacked)	1.30— 1.40
Flocks and satinettes	.70— .80
Tailor rags	.60— .65
Gunny bagging	.80— .90
Manila rope	2.75— 3.00
No. 1 white envelope cuttings	2.50— 3.00
No. 1 soft white shavings	2.25— 2.50
White blanks	1.40— 1.50
Heavy ledger stock	1.50— 1.75
No. 1 magazine	1.40— 1.50
No. 1 book stock	1.00— 1.20
No. 1 manila cuttings	1.50— 1.60
No. 1 print manila	.70— .80
Folded news	.50— .60
Over issue, news	.75— .90
Kraft	1.40— 1.50
No. 1 clean and mixed papers	.30— .40

NEW YORK MARKETS.

New York, May 14. — (Special Correspondence). — On the whole business of fairly good volume has been transacted in paper this week. The market is still far from normal, as consumers of all kinds of paper are purchasing almost solely against direct requirements, yet demand continues to gradually broaden and the situation seems slowly though steadily improving. The trade is now speculating as to when demand for paper will open up in something approaching normal proportions. There are many who express the opinion that activity in the market wll not revive in full measure before well into the fall, whereas others take a more optimistic view and are of the belief that demand will considerably expand along about August or at least by the first part of September. Those who hold the latter opinion base their ideas on the fact that buying of paper of practically every description picks up in the Autumn and who therefore expect that publishers and printers and other consumers in a great many instances will come into the market earlier this year than usual to lay in stock for fear that if they wait until later in the year that a general buying movement will force prices higher. It is commonly felt among paper jobbers and distributors that prices will have touched rock bottom by August and it is believed that buyers will appreciate that holding off further will avail them nothing in the way of additional saving in purchases after that time, so that it is expected a good percentage of consumers will then come into view to acquire supplies. If this theory works out, it will mean that trade in paper will be of larger volume in the latter part of this summer than is ordinarily the case and that mills will experience a substantial improvement in demand for their product earlier than probably some of them now look for.

More newsprint mills closed down this week as a result of additional operatives joining the strike of pulp and newsprint mill workers. It is estimated by the operatives' union that upwards of 15,000 men are now on strike, and it is stated that manufacturers are making no effort to run their plants with other men. Certain of the newsprint mills have renewed their contracts with the labor union and are operating without interruption, but it is variously estimated that production of newsprint at present is no more than between 30 and 50 per cent of normal. The strike situation has created a still firmer tone to the market. Publishers are proceeding cautiously in absorbing additional supplies of newsprint but most of them are looking around the trade and are acquiring such lots of paper as are to be found at what are considered reasonable market prices. No more newsprint is being offered at so-call-

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ed distress prices, and buyers find it imperative to meet recognized market levels to get supplies. The strikers claim that the shutdown of mills is aimed not at them but at the paper market, but this appears hardly true because the average manufacturer of newsprint has no excessive stock of his product on hand today. Virtually all of them have stock, of course, but indications are that the great bulk of surplus newsprint is in the hands of publishers rather than mills.

Spot quotations on newsprint in standard rolls range between 5.50 and 6 cents a pound at mills, and those manufacturers affected by the strike are mostly refusing to quote to the transient trade while conserving such supplies as they have to take care of contract customers' wants. The market tone is distinctly firm and there appears scant doubt that if the shutdown of mills continues a few days longer that prices will respond by moving upward.

Mill quotations on book papers are maintained but signs are not wanting that manufacturers are accepting orders in frequent cases at lower prices than they quote. Jobbers are being instructed to name any reasonable price to prospective buyers and then to submit their offers to mills, which are seldom turned back. This shows, of course, that manufacturers want business and that they are willing to produce on a very slight margin of profit so long as they can keep running. Around 7 cents a pound at mills is the average price named on machine finished book, with some transactions reported down to 6.50 cents.

Tissue paper quotations are steady at 95 cents per ream for No. 1 white and there is a moderate demand for high-grade tissues, while toilet tissues are moving in exceptionally good volume in comparison with other kinds of paper. Wrappings are in routine call and prices are at a basis of about 7 cents a pound on No. 1 domestic kraft. Fine papers show little change in price, and the manufacturing situation has not improved to any appreciable extent. One reason for this is that a majority of mills are filling current orders from stock, present mill holdings of fine papers being larger than of any other class of paper.

Fair activity prevails in the box board trade. Quotations incline upward but no actual change of note has occurred. Plain chip is quoted by most mills at $30 a ton f.o.b. mill and filled news at around $35, but some manufacturers are booking orders at slight concessions from these prices.

GROUNDWOOD. — Inquiry for mechanical wood pulp is on the rise and quotations tend decidedly toward higher levels. Those transient buyers who usually depend on pulp mills which are closed down, because of the strike for ground wood are looking about the market in search of new sources of supply, and although no large tonnage orders have been reported placed, the situation generally shows increased strength and the market is certainly working into a firmer position. Domestic grinders are quoting between $30 and $35 a ton at pulp mills for spruce ground wood of prime quality, with some unwilling to sell any sizable amount of pulp at these figures, yet Canadian producers are moving at least a part of their output at as low as $25 a ton f.o.b. pulp mills. With newsprint mills shut down, consumption of ground wood obviously is greatly reduced, but on the other hand, the fact should not be lost sight of that a good many grinding plants also are down, thus decreasing the production of pulp.

CHEMICAL PULP. — There is still a lack of important demand for the higher qualities of chemical wood pulp, such as bleached sulphite and soda fibre. Those grades produced by mills affected by the strike of pulp and paper mill operatives, however, display a stronger price tone under a gradual increase in inquiry from consuming quarters. Newsprint sulphite is firming, and bids of $70 per ton are being freely refused by domestic manufacturers, asking prices on this kind of pulp ranging generally from $75 upward. Kraft seems a little stronger in tone also, with 3.75 to 4 cents a pound mostly asked by mills although now and then a sale is reported at lower levels. Quotations of the leading producers of bleached sulphite are maintained at 6.50 cents per pound at mills, but those manufacturers offering sulphite at cheaper figures are getting most of the transient business at present. There is nothing of note doing in the foreign pulp trade and prices are largely nominal and on a broad and irregular range.

RAGS. — Paper mills continue to keep out of view as buyers of rags and the market for this commodity is in a dull condition. Roofing rags are moving comparatively well but other grades are more or less dormant, writing paper manufacturers showing practically no desire to absorb supplies. Dealers have found that low prices attract few buyers and are consequently endeavoring to sustain quotations and are not pressing matters. Asking prices on old No. 1 repacked thirds and blues around 2.25 cents, on new No. 1 white shirt cuttings around 10 cents, on washables around 5.25 cents and on blue overall cuttings around 6.25 cents, but buyers can no doubt secure at least some of these rags at lower costs. Roofing stock is

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PAPER STOCK.—Certain grades of old paper are firming in price under a little better demand from consuming quarters, this being attributed by most members of the trade to the shutdown of pulp mills and the resultant need of papermakers for larger quantities of waste paper. No. 1 soft white shavings are quoted at an advance at about 2.25 cents a pound f.o.b. New York, with some dealers disinclined to take orders at this basis owing to the upward trend of packers' prices. Old kraft paper is firmer at around 1.50 cents per pound, and white news cuttings are scarcely to be had at less than 1.40 cents at shipping points. Books are quotably steady at 90 to 95 cents a hundred on No. 1 heavy flat stock, and ledgers and writings are held for about 1.75 cents a pound. Folded newspapers in New York are selling to mills at 35 to 40 cents a hundred and No. 1 mixed papers at an average of 25 cents, but higher prices are reported ruling in other parts of the country.

OLD ROPE AND BAGGING. — Old Manila rope holds steady in price at about 4 cents per pound at shipping points and is moving in fairly good amounts. Bagging is in dull demand and quotations are unchanged at former nominal levels.

CANADIAN MARKET FOR HEAVY CHEMICALS.

Everything in this line is very quiet at present, so many mills being shut down, or run on shert hours, especially is this the case for all chemical supplies in the pulp and paper industry.

ALUM is quoted at 5½ to 6 cents, and there is very little demand.

BLEACH is quoted in the neighbourhood of $3.50 per 100 lbs., though with very little activity, as most of the mills are supplied on a contract basis.

SODA ASH, in carlots, is around 3 cents.

CAUSTIC SODA is 5 cents, Granular 5¾ for less than earlead lots, with a price of about one-quarter of a cent less for carlots.

There is practically no spot market activity in these lines just now.

A BUSINESS BAROMETER.

Mr. James W. Sewall, forest engineer and timber cruiser, with offices at Washington, O.C., Old Town, Maine, and Sanford, Florida states that hitherto the intensity of demand for services such as he offers, has fluctuated with the rise and fall of business in the lumber and pulpwood circles. For a period of years back he has felt acutely the rising activity or waning strength of the lumber market, and as a rule the demands or lack of demand for his services have preceded slightly the general apparent trend, just as stock market prices are apt to discount futures. With these past facts in mind he feels reasonably optimistic as to the comparatively near future .as quite a quickened call for estimates and working plans is making itself felt, in distinct comparison with the period commencing early last autumn and lasting through most of the winter, when new orders were scarce and the Sewall crews were kept busy mainly on work already started.

His work now in process and definitely decided upon covers an area of over 1,400,000 acres, but Mr. Sewall says that his organization and system are now so well developed that calls on his personal energy are far less than they were 15 or 20 years ago, when he started in with one or two men and did his own cooking.

H. S. TAYLOR RETURNS.

We wish to announce the return of Mr. H. S. Taylor to Canadian fields of work. Mr. Taylor has opened up an office at 302 Guarantee Building, under the name of H. S. Taylor, Limited, the firm carrying on the design, construction and operation of pulp, paper and fibre mills, together with hydro-electric developments and steam power plants.

Mr. Taylor was, for a number of years, with Geo. F. Hardy, New York City, and later was Chief Engineer of The Spanish Pulp and Paper Mills, Ltd. In 1919 Mr. Taylor formed the Management Engineering and Development Co., of Dayton, Ohio, being General Manager and Chief Engineer of this organization and the great success of this Company is shown by the number of successful installations completed. Mr. Taylor will retain his connection and present position with the Management Engineering and Development Co.

HOWARD S. TAYLOR.

Mr. Taylor feels that hs is at home in Canada and wishing to be in close touch with the Canadian Pulp and Paper Industry, has opened up an office in Montreal, and will have a most efficient organization at the disposal of the Canadian manufacturers and we trust they will avail themselves of this service.

Mr. Taylor has many fiends in the Canadian Pulp and Paper Industry who, we know, will extend a hearty welcome and we only hope they will make 302 Guarantee Building their headquarters when in need of engineering, design, or consultation for their mills.

EASTERN EQUIPMENT CO., LTD., have moved from the McGill Building and taken the entire floor of 234 Beaver Hall Hill, Montreal where they will have, in addition to their offices, an extensive show room. This firm have recently been appointed Canadian agents for St. Clair Brothers, Galt, Ont., manufacturers of pumps, concrete mixers, hoists, etc. They also handle new and rebuilt contractors' equipment of all kinds as well as locomotives.

Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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EDITORIAL

HOW MANY FIRES THIS YEAR?

With the time for the spring drive approaching, and in a season which is already remarkable for the rapid approach of warm weather, we are likewise closer than usual to the time of greatest fire hazard. Not only has the early spring brought the litter on the forest floor to a drier condition than is usual at this time of the year, but the sunny days have already started the exodus of fishermen to the woods. The menace to the forest is very largely due to the carelessness of these occasional visitors and to the occasional carelessness of the hardened woodsmen and river driver. In spite of the increasing amount of attention that newspapers are giving to the necessity for protecting our forests from fire, in spite of posters liberally exhibited at strategic points in the forest, in spite even of personal appeals from forest rangers and others, there are still some people who are blind and deaf to warnings, who are insensible to appeals, but who thoughtlessly and carelessly persist in building camp fires too large, in leaving embers unextinguished, in throwing away lighted matches, pipe ashes and cigar butts, and even to operate locomotives without spark arresters, and start brush fires when every condition favors the spread of the flames to the forest. Many of these careless and thoughtless people, because they have not actually invested money in the purchase of woodlands, fail to realize how dependent they are for their jobs on the forest and the industries which it supports. The holiday fisherman and gamester cannot carry on his business at home without paper, the settler cannot build his house or buy farming implements except for lumber and other wood products, the lumberman and log driver would surely be out of a job if there were no forests, and there would be far less freight for our railways were there no requirements that wood and other raw materials be brought to our pulp and paper mills, and other wood using plants and finished products hauled away from them.

The Governments of our provinces and individual companies are co-operating in the expenditure of many thousands of dollars to protect the forest from fire. Their work is mostly a brave effort to prevent small fires from becoming widespread disasters. Recently the ranger has become more of a co-operating official since more sensible and drastic laws have been passed requiring that permits be obtained for the burning of brush by settlers. This law alone has saved millions of cords of wood to the Province of Quebec and will be equally efficient in other provinces where similar measures are being undertaken. This degree of co-operation is far from being adequate to meet the full situation. The ranger is still too much like the physician who is only called when disease has gone too far. The more enlightened idea which is now gaining ground for maintaining health instead of curing disease, must be applied to our forestry situation where, instead of endeavoring to extinguish fires, we must succeed in preventing them. Very few fires occur because of spontaneous combustion and strokes of lightning but by far a greater number are caused by the carelessness of individuals. The problem is one which calls for the self appointment as an assistant ranger of everybody who goes into, or near the woods. It means eternal vigilance with regard to fire and a feeling of personal obligation and responsibility. It is a difficult matter to trace, arrest, and prove guilty, a person who has started a forest fire but it is an exceedingly simple matter for every person who goes into the woods to prevent a fire from starting. It does not cost a single cent to extinguish a camp fire, a cigar stub, or a match. It costs only a thought and yet such a thought will save thousands of dollars and will re-act on the thinker by maintaining in a protective state, a growing forest which is a source of revenue to the province and consequently a saving of taxes to the individual. Governments must be paid for and the wise individual will let nature do it for him.

The forests of Quebec Province alone provided an income in 1919 of 15 per cent of the revenue of the province. With proper attention they will do better than this but to do so they must be protected and the chief enemy is fire.

A MESS OF POTAGE.

Most people are familiar with the story of the Hebrew who sold his birthright for a square meal. It appears that he got a square meal but not a square deal. He obtained a temporary advantage at the expense of a permanent position and life-long inheritance. He did not get his money's worth, putting it into present day language.

The people of Canada are in the position of Esau; they are selling their birthright and an unsurpassed inheritance to Nature's wealth for the temporary advantage of a few dollars in present day profits. It is not necessary nationally or individually to sell this inheritance and even where the argument of international friendship and co-operation supports the export of pulpwood there is an equally strong but less frequently heard argument that those who benefit by the trade should pay something towards maintaining the estate.

On another page is a letter from our friend Barnjum which relates to this subject. Mr. Barnjum and the editor do not agree on every subject, we are frank to admit, and it should also be said that, like the co-ed. in the college song who could not be "a son of the institute", so the editor cannot be strictly called a "Good Canadian" because of being a citizen of the United States. It is, however, possible to consider this question entirely apart from national allegiance. Without any question the biggest problem connected with the administration of Canada's forests, is the protection of the present growth and the insurance of reproduction of the supply. Of practically co-ordinate importance but necessarily secondary in point of accomplishment is the re-establishment on a productive basis by reforestation of appropriate areas so as to provide for the enormous demands that are absolutely sure to come within the experience of even the present generation. Proper administration of Canada's forests will necessarily require far greater appropriation than present expenditures, but every dollar that is properly spent on the forests will yield a good dividend. The person who buys timber from the Government through the licensing and cutting of wood from crown lands pays a fee which goes largely back to the forest in administration and protection costs. The man who buys wood cut on other lands pays nothing in this way for the protection and reproduction of the very material his own industry depends on. In other words, he is living on the output of a natural industry and plant on which he pays no insurance. Most of the pulpwood so disposed of is exported and furnishes the necessary raw material for about 20% of the pulp making industry across the line. The pulp and paper industry of Canada contributes generously both in the payment of dues and by continually co-operating in the protection and the up-keep of these forest resources. It is only fair that others who profit from the fact that Canada has these resources should also pay a share of their insurance.

As a matter of fact the time can be seen coming when other raw material will largely replace wood as a source of paper making fibre. Since the industry in Canada, not to mention that in the United States, is almost entirely dependent upon wood and since neither of these countries is naturally fitted for the production of these other fibres, it is necessary that every possible step should be taken to conserve present supplies and provide for future growth. To do this requires money and the levying of an export tax on pulpwood seems to us to be a fair and reasonable means of producing revenue which could be applied to maintenance of the forest and which at the same time would give a fairer distribution of such costs.

SAMPLING PULP.

In this issue will be found an address of the subject of testing pulp for moisture and the discussion of the paper by the Technical Section and the British Paper Makers' Association. The paper contains a number of suggestive thoughts which should be carefully considered by those who are engaged in the manufacture of pulp for export to Great Britain. It is pleasant to read the complimentary reference to the Canadian industry but there does not seem to be any suggestion of enlisting the co-operation of the Canadian mills in arriving at a standard method for procedure. The members of the Technical Section who took part in the discussion seem to consider Scandinavia as the only important source of pulp. It is true that the northern European countries have been furnishing most of the British mills with their pulp supplies but there are some in Canada who feel that this is not a permanent arrangement. If anything co-operative is to be done along this line it would seem like a good plan to give Canada a seat at the table. The sampling of pulp is a very vexing problem which should be given the best attention in a joint attack, by all those interested in the matter.

COBWEBS.

We read with some surprise, the statement made by a leather man in Montreal, that "the kid industry in Canada is still in its infancy."

There are not so many "Trade Inquiries" in the Weekly Bulletin of the Department of Trade and Commerce as we used to see a year ago.

Canada buys $3,000,000 worth of sisal grass for binder twine, of which $2,000 is from Jamaica. An increase in the proportion from this island would greatly improve our market for manufactured goods there, would keep our money in the Empire and slightly improve our trade balance elsewhere.

In the fiscal year ending April 1st, 1921, Canada imported $1,807,330 worth of advertising pamphlets, etc. and $977,905 of text books ($530,992 from U. S. and $316,448 from U. K.)

Since 1917 the part of Canada's exports going to the United Kingdom, has fallen uniformly from 64 to 27 per cent. of the total, while it has increased to the United States from 25 to 46 per cent. and to other countries from 11 to 29 per cent.

It was quite a shock to learn that Canada imported more than *fifty-seven million dollars worth* of wood, wood products, and papers (including printed matter) in the last fiscal year. This is twenty per cent. of the value of exports derived from the forest, which included pulpwood worth $21,513,594. Imports of paper and the like amounted to twelve and a half million dollars.

Lt.-Col. Thos. Gibson, Vice-President of the Spanish River Pulp & Paper Mills, Ltd., stated that, so far as he knew, there was no sign of settlement in the strike of pulp and paper mill workers, which has been in progress since May 12.

The Testing of Wood Pulps

G. H. GEMMELL, F.I.C.

The very large number of claims for excess moisture, or more correctly, short weight, on deliveries of wood pulp, during the past two years, renders it unnecessary for me to apologise for again introducing a discussion on this well worn subject. My experience tells me that there is dissatisfaction on both sides. On that of the makers of the wood pulp, who affirm that the claims are excessive and unjust, though they take the greatest possible care to see that the deliveries are sent out of correct weight. Also on the part of the buyers, because of the annoyance and trouble of making these claims and tests, and the feeling that the seller is deliberately sending deliveries forward short weight. There is also the fact that not unfrequently, after one or two tests by their own chemists, where short weight is found, the officially appointed analyst certifies correct weight, or overweight, of pulp.

A movement is on foot, on behalf of the sellers, at the present time to amend the Wood Pulp Contract Note, and it is with a view of arriving at a more certain and accurate method of testing that I am makng this contribution to the first conference of the Technical Section of the Papermakers' Association of Great Britain and Ireland.

I want in the first place to make it clear that I hold no brief for the papermaker, and that most of the views stated herein have been already expressed to the pulpmakers, or their representatives.

During the past twelve months, I have made tests of wood pulp in presence of five representatives from the Continent, one at the port of delivery, the others at paper mills. In one instance, a duplicate sample was sent to the makers of the pulp. In the others, at my request, the representative accompanied me to my laboratory, and saw the samples weighed and dried. In none of these cases was any exception taken at the time, or subsequently, to the methods adopted.

One point which has been particularly emphasised is, that any error in the test is primarily due to the selection of the bales, and my experience tells me that this is the weak point in the present method of testing wood pulp. The "Official" wedge method of sampling leaves little to be desired in the way of improvement if due care is exercised. We have records of a large number of duplicate tests made from the same bale by ourselves and mill chemists, and it is rare that the difference exceeds 0.1 per cent. I have occasionally had complaints from the mill that my test does not show so much excess moisture as the mill test, but when I know that these tests are often made by the store-keeper, or timekeeper, or office boy, I naturally take no notice of such complaints.

As I have frequently pointed out to representatives of the pulp makers, all causes of difference would be eliminated if bales were sent out uniform in weight and moisture, in accordance with the contract note, which they admittedly are not. Where you have a parcel containing thick and thin bales, moist and dry bales, heavy and light bales, the final result of the test obviously depends on the kind of bales selected, and on this matter the official analyst has not an entirely free hand. Theoretically, he is entitled to choose any bale he desires, but in practice he cannot always do so. On arrival at the paper mill he may find a stack of from 3,000 to 5,000 bales. This stack has taken a week or more to build up. Obviously then, he cannot have the stack taken down and rebuilt, so that he may select bales from all parts of the cargo, but must select them from on or near the top. He will then get an undue proportion of bales from one part of the cargo, which may be wetter or drier, heavier or lighter than the average. If there is a variation in the size of bales, he can by inspection approximate the number of thick and thin bales, and sample bales in proportion.

As indicative of variations normally met with, the following are taken from our books of a cargo of pulp delivered to three mills:—

Mill.............	*A.*	*B.*	*C.*
Number of bales sampled	40	30	16
Of which *Light* bales	39	17	7
" *Heavy* "	1	13	9
Wgt. per bale invoiced (lbs.)	280 lbs.	280lbs.	280 lbs.
Average Gross wgt. per bale	275.7 lbs.	277.7 lbs.	279.2 lbs.
Excess Moisture (over 10%)	4.31%	3.49%	4.88%
Air-dry weight per bale	263.8 lbs.	267 9 lbs.	265.5 lbs.

Individual Test of 10 Bales (5 sheets from each dried.)

Bale No.	*Wgt. of Bale* (lbs)	*% Dry Pulp.*	*% Moisture.*	*% Air-dry Pulp.*	*% Excess Moisture.*	*Wgt of air-dry fibre per bale.*
1	319	88.45%	11.55%	98.28%	1.72%	313.5lbs.
2	318	87.45%	12.55%	97.16%	2.84%	308.9 "
3	311	79.31%	20.69%	88.12%	11.88%	274 "
4	313	85.32%	14.68%	94.80%	5.20%	296.7 "
5	310	85.72%	14.28%	95.24%	4.76%	295.2 "
6	316	85.79%	14.21%	95.32%	4.68%	301.2 "
7	325	74.18%	25.82%	82.42%	17.58%	267.8 "
8	328	88.84%	11.16%	98.71%	1.29%	323.7 "
9	311	85.05%	14.95%	94.50%	5.50%	293.9 "
10	312	81.15%	18.85%	90.17%	9.83%	281.3 "

Test From the Same Cargo, at two Mills, in Presence of Representative from Scandinavia.

MILL......................	*A.*	*B.*
Number of bales sampled.............	25	18
Of which *Light* bales.................	22	8
" " *Heavy* ".................	3	10
Weight per bale invoiced.............	288 lbs.	288 lbs.
Average gross weight per bale.........	277.1 "	281 "
Excess moisture.......................	7.91%	4.8%
Air-dry weight per bale................	255.2 lbs.	267.5 lbs.

It is frequently noted that a light or thin bale is also a moist bale, though this is not always so. A particular brand of pulp, of high grade, which is usually delivered correct weight, was, during a period of some months delivered short weight, and numerous claims were made. At one test, I particularly noticed a vari-

Tests of a Cargo of Pulp, Sampled in Presence of Representative from Scandinavia.

SAMPLED AT	DOCKS	DOCKS	PAPER MILL.
Number of bales sampled.	40	40	36
Of which *Light* bales.....	13	14	4
" " *Heavy* ".....	27	26	32
Weight per bale invoiced.	373 3 lbs.	373.3 lbs.	373.3 lbs.
Average gr. wgt. per bale	374.9 "	374.6 "	378.75"
Excess moisture.........	2.99%	3.23%	2.15%
Air-dry weight per bale..	363.7 lbs.	362 5 lbs.	370.7 lbs.

ation in the size of the bales, and selected a thick and a thin bale for individual tests, with the following results (5 sheets per bale dried):—

	Light Bale (Thin)	*Heavy Bale* (Thick)
Weight per bale invoiced.............	444 lbs.	448 lbs.
Gross weight of bale.................	444 "	466 "
Percentage of Air-dry pulp...........	94.98%	102.48%
" " Excess moisture........	5.02%	2.48% fibre
Air-dry weight per bale..............	421.7 lbs.	477.5 lbs.
Weight, light or heavy...............	26.3 " Light.	29.5 " Heavy.

I should like to remark here that certain brands of pulp which we test are invariably delivered of correct weight, whilst others, though short weight, are more uniform, both as regards weight per bale and moisture contents. The result of this is that duplicate tests at different mills give results very close to each other. Example:—

MILL..........	*A.*	*B.*	*C.*	*D.*
No. of bales sampled.	25	25	25	25
Ofwhich *Light* bales..	2	3	0	1
" " *Heavy* " ..	23	22	25	24
Aver. gr. wgt. per bale	459.9 lbs.	462.0 lbs.	466.7 lbs.	464.3 lbs.
Excess moisture.....	1.18%	1.6%	2.22%	1.23%
Air-dry wgt. per bale.	454.47	454.65	156.3	458.6 lbs.

MILL......................	*A.*	*B.*
Number of bales sampled.............	20	20
Of which *Light* bales.................	20	10
" " *Heavy* "	0	10
Average weight per bale.............	252.45 lbs.	278.5 lbs.
Percentage air-dry pulp..............	49.00%	44.38%
Air-dry pulp per bale................	123.7 lbs.	123.6 lbs.

Parcel of Pulp Sampled in Presence of Sellers' Agent.

	Light Bales (under 364 lbs.)	*Heavy* Bales (over 364 lbs.)
Number of bales sampled.............	50	74
Average weight per bale..............	352.68 lbs.	378.08 lbs.
Percentage air-dry pulp..............	60.10%	55.70%
Air-dry pulp per bale...	211.9 lbs.	210.6 lbs.

I could multiply the instances where, because of the irregularity of weights of the bales and the moisture contents, the result of two or more tests vary, whereas, in other cases, because of uniformity in weight and moisture, duplicate tests agree. When we know that in certain brands of pulp claims are rarely made, whereas in others there is always a claim for short weight, the inference is obvious, and the makers have no just cause of complaint. It must also, I think, be agreed that if anyone stands to lose on the transaction it is the paper maker. As the result of an official test, the pulpmaker is paid for the air-dry fibre he delivers, but if no test or claim be made, he may be paid in part for water instead of fibre. I know of mills in Scotland who regularly receive pulp on which claims are made by others, yet who never themselves test their pulp. These cases are a clear gain to the pulpmaker. At one of these tests previously referred to, the representative present on behalf of the sellers was a chemical engineer, who was responsible for the packing of the pulp. When asked what was the reason why certain bales contained more moisture than others, he stated that the sheets in the moist bales were thicker than in the drier bales, and when run off the machine they were not dried so effectively. To determine whether this was so, we took 20 sheets from a moist bale and 20 sheets from a dry bale. The results were as follows:—

	Moist bale.	*Dry* Bale.
Weight of Bale......................	279 lbs.	276 lbs.
Weight of 20 sheets (moist)...........	9.588 "	8.255 "
Weight of absolutely dry pulp.........	7.025 "	7.200 "
Loss................................	2.563 "	1.055 "
Percentage of moisture...............	26.75%	12.78%

It will be noted that, though the moist sheets were heavier than the dry sheets, they did not contain more fibre. The excess weight was due to water only.

It is the usual practice in Norway and Sweden to invoice, or, at any rate, to infer that the pulp contains 90 per cent. dry fibre and 10 per cent. of water, or, for moist pulps, 45 per cent. dry and 55 per cent. water. On a recent occasion, I made a test of a delivery of pulp and found an excess of water. The short weight was so large that I decided to exercise the option open to the analyst, to take a further sample in order to confirm the result. When the pulpmakers received the certificate, they wrote saying they could not understand why there was such a shortage, and that their chemist's test showed that the average air-dry test was 98 per cent., yet they had invoiced the parcel at 100 per cent.

Some **Canadian** pulps, and, before the war, most German pulps, had each bale legibly stamped and numbered, and also gave the weight and air-dry or bone-dry test per bale. Accompanying the parcel was also sent a specification of the bales and their contents. If the Scandinavian pulpmakers would adopt this plan, there would be fewer complaints of incorrect results from the choice of abnormal bales by the official analyst. The average weight and air-dry percentage of the whole parcel being known, the analyst could then take half the bales below and half above the average, or, if needs be, at very little extra labor, sample and test individual bales.

I have thought of various plans for overcoming the difficulty arising from irregularity of the weight and moisture contents of the bales, and the above appears to me to be the most satisfactory solution for the analyst, as well as for the buyers and sellers, and I put this forward for the careful consideration of those to whom the amendment of the Contract Note is entrusted. In connection with this proposed amendment, I would also suggest that a small committee, consisting of representatives from the British and Scandinavian Wood Pulp Associations, the Papermakers' Association, and two or three representative official analysts, be appointed to draft the amended Contract Note, and submit to the two Associations.

In conclusion, I would briefly draw your attention to some of the points in the present Contract Note which I consider should be more clearly specified:—

Clause 3.—Packing and Weighing. "The pulp to be packed in bales of declared uniform weight, or a specification to be given stating the weight and number of each bale. . . ."

Is the analyst justified in rejecting abnormal bales? I believe it is the practice of some analysts to reject all bales 28lbs. over or under the invoiced weight. I can quite understand, and have frequently rejected heavy bales, because they showed evidence of external wetting; but if a light bale is intact, with wrapper, wires and number, on what grounds should it be rejected?

Clause 3, par. 3.—Intact Bales. "The samples to be drawn from accurately weighed and intact bales, as nearly as possible in the manner agreed upon by the British and Scandinavian Pulp and Paper Associations."

Some of my paper making friends have protested because we reject bales which have been wetted or otherwise damaged in transit. My contention is that the analyst should, as far as possible, select bales in the same condition as they left the pulp mill. To obtain an average sample is difficult enough under normal conditions, but it is far more difficult where damaged bales are to be included in the test. I would therefore suggest that the clause reads: "intact and undamaged bales."

Clause 3, par. 3 (last part).—"The analyst may at his discretion, within **three** days, test a further two per cent. of the parcel." This is not sufficient time, and I would suggest that at least five days' time limit be given.

Clause 8.—Time Limit. "All claims must be made in writing within 14 days after the delivery of the consignment at the consumer's mill, wharf, or station in the United Kingdom. . . ." Does this mean from the time the pulp arrives at the port of delivery, or begins to arrive at the mill or wharf, or after the whole consignment has been received by the buyer?

These may be looked upon as minor points, but if friction and unpleasantness is to be avoided, no effort should be spared to make the new contract note as complete and specific as possible.

DISCUSSION.

Mr. W. Bacon (Messrs. Sindall & Bacon), as an official analyst, sympathised with Mr. Gemmell in his trials and tribulations. One point he wished to raise referred to the selection of bales. The case cited by Mr. Gemmell, of 20 sheets from a moist bale and 20 from a dry bale, gave an illustration of the actual variation that took place in one shipment of sulphite pulp, and he could endorse that statement, namely, 26.75 per cent., as against 12.78 per cent. Undoubtedly, wedges taken of equal superficial area must have quite a different volume, owing to the increase of thickness due to the difference of moisture. Of course, Mr. Gemmell would make allowance for that in an ordinary test. With regard to the question of specification, there was no question of doubt about it, that this system was the only scientific, as well as the commercial way, in which pulp should be bought and sold. For their part, they had again and again tried to get mills to adopt this system, and they had even drawn up an actual scheme for their guidance in Scandinavia, with this object in view, but nothing up to the present had been done. Mr. Gemmell spoke about the Konigsberg pulp. He forgot whether they originally made their bales up to uniform weight, or whether they made them of varying weights; in any case, since the war, they had adopted the system of uniform weight, namely, 200 kilos per bale. If the Scandinavian firms follow the same lines, and generally they do so, they would still be in the same hole, for undoubtedly their weight did vary enormously. Recently he had a shipment of stuff to examine, and he found a variation of 3cwt. 3qrs. 27lbs. down to 3cwt. 0qrs. 10lbs. for bales of supposed uniform weight. The mill made an objection that he should take the heavy bales. Mr. Gemmell raised the point that some chemists allowed 28lbs. either way. They (Messrs. Sindall & Bacon) did not go on that minimum weight at all. If there were a number of bales over weight, obviously they must come into the test, because they were out of the parcel. In the same way, when they had light bales, if they had one 340lbs. and another weighing 360lbs., that was part of the consignment, and it was only fair to the buyer that it should be protected, and that it should come in as part of the test. They had one modification with regard to that: in a test they were doing there were 50 bales (going back to a specific test). If, in a particular test, only that one bale showed 3cwt. 2qrs. 27 lbs., and all the rest were 3cwt. 1qr. 15lbs. or so, and if, on the examination of the stack he was of the opinion there were no other bales up to that weight, he should clearly look upon that as a "freak" bale, and would be justified in rejecting it. His remarks, as applied to the heavy weight bales, also applied to the light bales. Proceeding, he said another interesting point was raised in regard to the question of "intact and undamaged" bales. He quite agreed it would be very nice to have this term put in—"intact and undamaged"—but what would Mr. Gemmell consider an absolutely "intact and undamaged" bale? Supposing he had to carry out a test from 1,000 tons of pulp, and that pulp had been transhipped and put on rail and the whole parcel had some of the covers removed, would Mr. Gemmell consider them "intact and undamaged" bales. The Contract Note clearly stated that the stuff was "gross for net." Official analysts should be agreed upon what they should consider "gross for net." To his mind it was clear that the bale, on leaving the mill, had a certain weight; through transit it had lost a certain amount of pulp, and they should allow for what pulp had been lost in the way of wrappers. When they took into consideration that the normal wrapper of a bale weighed between four and five pounds, it was a serious item not to disregard that loss of wrappers. So, if they had 6,000 bales of pulp, would Mr. Gemmell consider himself to be in a position to say a test could not be carried out because the pulp, no longer having a wrapper, was therefore not intact? If the words were put in, "Intact and Undamaged Bale," it might be difficult. The paper mill had got to undertake the work of testing, and an allowance for loss of wrappers should always be taken into account. It meant a loss, perhaps, but the test should be carried out on the lines of the Contract Note. He took it the task of the official analyst was to do the work as efficiently as he could. For that reason it meant either to pull the stack to pieces or the mill representative and the official analyst should be allowed to deal with discretion and agree between themselves as to the selection of bales and the allowance for loss that should be made. They had always tried to follow that out, and without exception they had always succeeded. Mr. Gemmell referred to the discretion of the analyst to take another test within three days. Regarding the three days as insufficient, Mr. Gemmell had suggested five days. They (Messrs. Sindall & Bacon) had never interpreted the Contract Note in that way; they had always interpreted it that the test must be carried out within three days of the expiry of their first test, and when they had had re-tests made—and they did occur sometimes—they had always succeeded in carrying their point. He agreed that such a matter should be mentioned in the contract. If they could agree, and get something put into the Contract Note, it would be valuable. Mr. Bacon added that he was in hearty agreement with Mr. Gemmell on the point he raised regarding the specification, which had a drawback. His firm had an enormous number of special pulp tests, and it was hard work sometimes to go to a mill and find that it was almost impossible to get the requisite bales to carry out the test, in that they failed to have indicated either their number or the percentage of air-dry or bone-dry pulp through the rubbing away of the details from the face of the bale by handling. It is a sore point with the paper mill people, because instead of taking half-an-hour it might take three or four hours to get the requisite number of bales and they might have to pull half the stack to pieces. The Nordentscher had stuck inside the wrapper a square label with the number of the bales, boiling number, and the percentage of air-dry. If they could get the Scandinavian firms to adopt such a system, the lot of the pulp-suppliers' representative and that of the papermaker would be a happy one.

Mr. Mowat (Messrs. Peter Dixon & Sons, Ltd.) recalled that he had been looking through their list of tests, and he noticed that the chemist's tests from the duplicate sample did not correspond with the results that they obtained from the analyst. He noticed one case in particular, talking of sulphite, in which the mill chemist got 13.80 per cent. of moisture, while the analyst got 12.92 per cent. The next case was somewhat different. Their own chemist's test showed 12.27 per cent. of moisture, while the analyst's showed 10.73 per cent., clearly a case, he should say, where the analyst had failed to dry his pulp correctly. With regard to the point of light or thin bale and a moist bale, so far as mechanical was concerned, they always looked upon light bales as dry bales, and heavy bales as moist or wet bales. Another point, about the chemical engineer who visited this country. When he asked the reason why certain bales contained more moisture than others, he stated that the sheets in the moist bales were thicker than the dryer bales. Mr. Gemmell said it would be noted that although the moist sheets were heavier than the dry sheets, they did not contain more fibre; the excess weight was due to moisture only. The chemical engineer said the moist sheet was a thicker sheet, and therefore had got more fibre in it. As to the Contract Note, he thought they had better leave the Contract Note alone; he thought it was all right. They required a definition of an abnormal bale. Was an abnormal bale an isolated bale? Of coure, a representative sample must be drawn. Many a time they got abnormal or over-wet bales, but they were not wet as regards the parcel. Therefore the analyst required to take his representative sample. The whole cargo was the representative sample. The speaker went on to refer to the analyst's discretion to make a re-test in three days of a further 2 per cent. Three days were not sufficient. It was all right if they were working on a small parcel, but with a big parcel they required five days at the very least. As to where the consignment was to be signed, Mr. Mowat thought that this should be at the mill, and that was the alternation, he thought, one might make, but it was a minor point. After putting in a plea for the analyst, the speaker thought that all mills ought to have a scale or a balance that would weigh up to 14 or 28lbs., for the convenience of the analyst, so that he could weigh his sample before it left the mill. He thought that for all concerned, both the mill owners and the papermakers and the pulp agent, it was better that this should be done.

Mr. W. Edington Aitken (Messrs. Peter Dixon & Sons, Ltd.) mentioned that they had just had a delivery of mechanical invoiced at 222lbs. per bale. The variations were between 152 and 236lbs., not merely isolated bales, but batches. There would be a claim upon it. The analyst weighed the first bale, and got approximately the invoiced weight. The second bale he rejected as too light; the third bale he rejected as too light; and then he carried on for ten bales and decided to put them all in. It was ridiculous. What they wanted with regard to selection of bales was a representative sample. It did not matter what condition the pulp came in, so long as a representative sample of that pulp was taken. If they all happened to be torn they could not get a single "intact" bale, and must they lose because they could not make a sample that corresponded to the phrase: "Intact Bales"? Mr. Gemmell spoke of having to take bales from the top of a stack. Well, "news" mills had pretty big stacks as a rule. The stack could be cut by going straight down from top to bottom, so that they got a variation from top, centre, and bottom. The speaker went on to say that he happened to be at the docks at Grimsby on one occasion, and he noted the numbers of eight wagons, four of which were being filled and another four they were starting to fill. He took the numbers of these eight waggons. Their mill was not above a mile and a half railway journey from the docks, but these waggons came in on separate days showing that the stuff as unloaded was not coming in any sequence. They got a good average over the delivery. If that happened on this side, what happened across the water when the bales came down from the mills to the port where they were loaded?

The Chairman said that a Committee appointed by the Papermakers' Association was endeavouring to agree to a revised form of Contract Note with the British and Scandinavian Wood Pulp Association. Wood pulp tests was one of the subjects under discussion.

He said that as pulp was coming in at the present time it varied much both in the weight of the bale and the moisture contents. He was sorry to say it, and perhaps it was a failing of human nature, but it appeared that as the price of pulp had soared upwards the moisture contents had shown a tendency to rise in sympathy. The figures submitted by Mr. Gemmell in the A.B.C. mills in regard to chemical pulp showed that if proper attention was given to the subject it might be reasonably dealt with. It would pay every mill in this country to employ a chemist, if only for the matter of pulp-testing; they would save his salary on that alone, and he would be useful in other directions. The big "news" mills must have claims amounting to thousands of pounds per annum. So far as the wedge system was concerned, it was an accurate, sound and scientific method, although, of course, where abnormal cargoes come along, common sense must be exercised. So far as his mill was concerned they always made a duplicate test with that of the analyst, and they never allowed the analyst to see their original test figures. When the analyst made his test they arranged to take a duplicate wedge, and were then able to check his results by their own re-test. As to the Contract Note, the question of what was an "intact" bale had been raised, and the view had been put forward that it might be desirable to alter the contract clause to read something in the sense: "That normal and intact bales should be taken." A normal bale would be one that was not wet by extraneous moisture. As to the question of specification, that would be possible in the case of chemical pulp, but in the case of mechanical pulp it was quite impossible. As to the period within which re-testing should be carried out it was not thought that the period of three days should not be exceeded for a re-test, because in the case of a "news" mill, where 1,000 tons of pulp per week might be used, there might under certain circumstances be an accumulation of several tons in the intervening period, and that would be a serious matter. The views of Mr. Gemmell would receive the attention of the committee, and it would be useful to get the advice of the official analysts before the matter was settled.

Mr. G. H. Gemmell, F.I.C. (Messrs. Gemmell & Thin), replying to the discussion, said he thought the debate showed equally as well as the paper did that there were a great many disputable points in regard to pulp-testing. In regard to the intact and undamaged bales that he referred to, it was very, very difficult to specify exactly what was meant by an undamaged bale; but, as he thought he remarked, if the analyst was in a position to select bales which showed no sign of damage in any way and he could get an ample proportion of these bales, he thought he was quite justified in rejecting the undamaged one. Mr. Gemmell thanked Mr. Bacon for his suggestion that the three days' allowance was three days from the time, he presumed, at which he certified his result. He had always taken it as three days from the time they originally took the sample. That was certainly too short a time. For instance is they drew a sample on Friday, they probably could not get it dried on Saturday, and it might be Tuesday before they got the result off. The effect was that the three days were exceeded. It was rather an awkward clause for the analyst, he must say. It was on very rare occasions that he exercised the option of returning to the mill and taking a further sample. If they did so, the papermaker wanted to know why they went back and asked what was wrong. The pulp maker also wanted to know why they did it, and all sorts of explanations had to be made. He agreed with Mr. Bacon with regard to the heartbreaking trouble of getting bales where there was a specification. There was no doubt that it was somewhat difficult. If they were to get representative bales according to the specification they had to turn over a great many bales. At the same time, the analyst's business was to go through and make as accurate a test as possible, and it did not matter whether he was taking two hours or two days, he had got to do it. He had made a suggestion, which he believed was being put forward in Scandinavia, and it had already been before the committee which was amending the Wood Pulp Contract Note. His suggestion, which had reference to the difficulty of getting bales from one part of the cargo only and not representative bales, was something on these lines. He did not put it forward as a perfect scheme, but simply with the idea that it might be discussed. At the port of delivery they knew that the bales came out of the ship in slings of four. If one sling out of every 25—that was four bales out of every 100—as it came out of the ship was laid aside (4 per cent. of the bales), and the stevedore was instructed to stamp these bales with some particular mark (a stencil supplied by the Association), these bales could be put in separate waggons and on arrival at the mill laid aside, and these would be the bales to be sampled. Of course, he saw there were objections to such a scheme, but he put it forward for discussion. They would at least get four bales out of every hundred, or they might take five out of every hundred, and that would be taken from all parts of the cargo, and there would be no difficulty about saying that they were not representative of the whole cargo. Mr. Gemmell added that he was glad to know his remarks had been received with such interest, and it just confirmed the view that he entertained that the whole subject bristled with difficulties, and that the analysts were between the devil and the deep sea. For instance, if they gave results, as in the larger proportion of cases they did, against the pulpmaker, they were in continual trouble with him. Only last week he had a letter from a papermaker who had to pay for two or three tons extra weight, and he assumed at once that they (the analysts) were wrong, and that they had made a mistake, but as he (Mr. Gemmell) maintained, and he stated it very definitely, they could not make mistakes because they took such precautions. They took precautions in checking and cross checking, and it was practically impossible for them to send in an incorrect result.

Mr. W. Leonard Tod (President of the Papermakers' Association), as an outcome of the discussion, which he thought had been very useful and interesting, moved the following resolution: "That this meeting of the Technical Section recommends that the committee now appointed to draw up a new Contract Note should consult the official analysts before the Contract Note is finally agreed upon, in order to get their views regarding the provisions for sampling and testing." He thought the views of the analysts, who had such an important part to play, should be before the committee, and they should know just what they felt in regard to the test before the new Contract Note was fixed.

The resolution was duly seconded, and carried unanimously.

Mr. Strachan moved that a number of mill chemists be included in the consultation, which was also carried.

FINLAND'S WOOD PULP AND PAPER INDUSTRY.

FINSK PAPPERS-OCH TRAVARUTIDSKRIFT, March 15, 1921.

The year 1920 began for our export industries under the most favorable conditions. Every sign seemed to indicate an active foreign market for the chief articles of export—wood and wood products. The rising tendency had been manifest since 1919. These influences were greatly intensified by the number of advertisements in the daily and periodical press, which consequently required additional quantities of paper and pulp. Producton exceeded the pre-war figures. All this indicated an active market, quite apart from the great rise in prices.

During the first part of the year the result was what might have been expected; sales were practically unlimited and prices rose steadily. But it was not long before a bearish movement was manifest. The beginning of this sentiment was at first missed by most market observers. A few, however, believed that the crest of the wave had passed, and during the latter part of the year a change for the worse was noted. Moreover, the influence of the war brought about a change in values which could not be foreseen. Political and economic causes, and mass psychology, exercised a potent effect, dislocating business and spreading an infection over industry like an epidemic.

Then it is to be recalled that the export duty on Finnish products had an evil influence. It imposed a burden on the wood pulp and paper industries, which placed them at a disadvantage in competition in the world's markets. However, 1920 has been marked by the fact that it is the first year in which business has been free from direct war influences. There are still restrictions upon trade, but on the whole it has pursued a normal course. Exceptions must be noted; for example, the eight hour day and the rate of exchange which has shown a downward movement from the beginning of the new year.

Timber Market.

During the first part of 1920 the timber market was active. By January 15 about 135,000 standards had already been sold, furnishing about 31 per cent. of the exports up to June. The tables of trade returns show that exports of the most saleable sizes went on favorably during the first months, declining towards the end, the total of standards exported in 1920 reaching 406,835. Exports of sawed wood amounted to 243,195 cubic meters; of battens to 1,273,852 cubic meters.

Wood Pulp Market.

At the beginning of 1920 there was a strong demand for wood pulp and boards. As prices had more than doubled in 1919 the belief prevailed that the high point had been reached. This was not the case. Prices rose rapidly during the first part of 1920. Then the decline began. In Europe the chief purchasers of Finnish pulp were France, England and Spain, and among transatlantic countries the United States and Argentina.

The paper mills of Finland took considerable quantities of pulp in 1920, about 13,000 tons of dry pulp, as compared with 3,000 tons in 1919. The Association of Finnish Ground Wood Mills reports the following sales during the past five years: 1916, 18,357 tons; 1917, 20,979 tons; 1918, 35,110 tons; 1919, 61,659 tons; 1920, 76,703 tons.

Of these sales in 1920 13,120 tons were for home consumption and 63,583 tons for export. Exports to America amounted to 11,792 tons, to England 9747 tons, to France 9468 tons, to Spain 4,043 tons, to Germany 5973 tons, and to Holland 1323 tons. The official trade returns give the total quantity of exports of wood pulp as follows: wet mechanical, 35,793,955 tons; dry mechanical, 64,096,551 tons.

Chemical Pulp Industries.

The cellulose market developed in 1920 practically on the same lines. During the whole of 1920 England was our chief customer, the United States coming next. It is worthy of note that our cellulose has gained a favorable position on the other side of the Atlantic, because great stress is laid upon quality in the United States, in order that the paper produced may meet the difficult requirements of the fast Fourdrinier machines. With regard to quality it may be said that it has been difficult to sell sulphate cellulose in 1920. Yet technical and chemical improvements have been made. Total production of cellulose can now be estimated at 300,000 tons a year. The new Aug. Eklof mill is in operation with an output of 15,000 tons of sulphite. The Cellulose Association's figures of 1920 sales are as follows:

Sulphite.—Finland, 16,538 tons; Foreign, 45,570 tons.

Sulphate.—Finland, 550 tons; Foreign, 19,036 tons.

The United States purchased 11,859 tons of sulphite, and 7,543 tons of sulphite. Exports to England were; 16,261 tons of sulphite, and of sulphate 6,303 tons.

Boards.

The demand for boards was also very active during the first part of 1920. Quotations on the English market were from £25 to £27. At various times these quotations rose 30 per cent. Prices were maintained until the end of the year when a decided fall occurred. Total sales of boards from 1916 to 1920 have been: 1916, 48,623 tons; 1917, 19,735 tons; 1918, 9,194 tons; 1919, 18,528 tons; 1920, 38,413 tons.

Of the 1920 sales 4,228 tons were to home consumers, and 34,185 tons for export. Most of these exports, or 23,149 tons, went to England, while America took 3,783 tons and France only 99 tons.

Paper Industry.

The outlook for our paper industries is also very satisfactory, demand being active in all departments. News print occupies the first position. In connection with this subject the course of prices has been peculiar. In the early part of the year quotations rose, but during the summer months the market manifested a bearish tendency. If we inquire into the causes of this depression, we find—apart from the universal economic disturbance—that buyers of paper were caught with unusually large stocks. The most potent influence was the liquidation of the speculative position, and this combined with a scarcity of money, and the dominating factor of all—Canadian production—induced a severe slump. Besides these things must be mentioned the interference of the Diet in the price of news print paper. Net production of the paper mills in 1920 amounted to 157,588 tons, compared with 95,104 tons in 1919. Of the 73 paper machines there have been from 53 to 58 in operation. According to official statistics exports of paper may be grouped together thus:

Wrappings, brown	19,620,718	kilos*
Wrappings, other grades	7,521,465	''
News print	90,072,026	''
Wall papers	2,689,803	''
Writing papers	8,652,534	''
Tissue paper	1,620,811	''

* 1000 kilos=2204 lbs., practically 1 long ton.

British Trade News

(FROM OUR LONDON CORRESPONDENT.)

London, 10th May, 1921.

The British paper industry still remains in a very unhealthy condition. On the one side, the coal miners, who are still on strike, are gradualy causing mills to close down, and on the other side, there is a keen fight against foreign imports coming into the market. As a result of these two elements, unemployment in the British paper industry is alarming, and merchants report little or no business being done. The "war" in the newsprint world still wages between the manufacturers and the consumers, and the latter gentlemen do not care one iota, according to their arguments, where the paper comes from so long as they can buy it at their own price. But the British manufacturer does care, because he must find an outlet and sell at a reasonable price to keep his mill going. The consumer says British newsprint has gone up since 1914 to the extent of 300 per cent, whereas the world price is below it. The manufacturer's case is answered by a newspaper proprietor, strange to say, who says: "The paper makers bought certain supplies of pulp in order to meet the needs of the newsprint users. Can they now justly be asked to make ruinous sacrifices by cutting their losses and bring down the paper to 2⅞ d.? But why 2⅞ d.? Why not make it 1¼ d. (equal to 2½ cents), less 17½ per cent as obtained once upon a time? The total yearly consumption of paper at present in this country is round about 1,200,000 tons. Thirty per cent of it is newsprint, 30 per cent writings and printings, and 40 per cent wrappings, etc. So that there is plenty of room for increased consumption before newsprint occupies the premier place. Yet the mills give to newsprint more consideration than to all the rest. At 4 d. (8 cents) there is a heavy loss to the maker, a state of affairs that cannot go indefinitely without ruining the industry. We have lately heard a good deal about the price of newsprint in America. The International Paper Co.'s price is 5½ cents, U. S. currency. Except in one case, the Canadian figure is also 5½ cents. But this paper, delivered in London, would cost £48 18 s. per ton. Forwarded to the provinces it would cost more. And what about the British papermaker? Well, his price is £ 37 6 s. 8 d. delivered anywhere in the United Kingdom. The only way to cheapen home-made paper is to find British support for it, so as to enable the mills to run at full capacity. Then the price will rapidly come down well below 4 d. (8 cents)." This is a newspaper owner's case for the papermaker and it is a reasonable one, and, also, of great interest to Canadians. But this only applies to the home market. In their connection with Australia and South Africa, the British papermakers have had more cancellations recently than they have had orders, and large orders of paper made up for the Colonial markets are being held in England awaiting some adjustment of the present financial stringency in these parts. There is a considerable falling off in trade in the Dominions and Colonies, and official as well as papermakers' figures bear out this fact.

Pulp Prices and Exchanges.

Before quoting the prices of pulps in England today I would first like to refer to the rate of Exchange in some countries with which the British papermaker has to compete. I mentioned some time ago that the Germans could buy their pulp cheaper than any country could produce it in Finland and this was one of the elements that enabled them (combined with low wages) to sell cheap paper in the British market. Well a comparison of some of the Exchanges will give an idea how the foreign papermaker will do business. In 1914 the German mark (equal to 24 cents) was worth 24 cents (1 s. in England); in 1920 (today) it is worth 1.8 cents (1 d. in England). Then we turn to Finland where in 1914 the mark was worth 19 cents; today it is worth 2¼ cents in England. In 1914 the Austrian kroner was worth 20 cents; today in England it is practically valueless. The Belgian franc worth 19 cents in 1914 is today worth 9 cents (or 4½ d.) in England. Now with these countries it is impossible to compete with such exchanges, particularly when one considers that the British sovereign (£1) is worth 246.94 marks in Germany and 53.95 francs in Belgium. It was on the strength of these exchanges that Mr. Stanley Cousins, on behalf of some of the British papermakers no doubt, wrote his famous letter to the "Times" in London — and which dropped like a bomb in a ton of cordite in some of the newspaper offices — asking the Government to put a protective clause in the Anti-Dumping Bill to save the paper manufacturing interests from unfair competition. The whole policy of the consumers is unfair and a poor return for services rendered during the critical times in war days.

While on the subject of paper prices one may naturally ask what are the prices of pulp in London today. Well bleached sulphite can be bought at £39 10s. a ton; easy bleaching at £30 and sulphite newsprint quality at £ 25. Unbleached soda (No. 1) is down to £29 10s. and kraft quality to £29 10s. to £ 30. Groundwood is £ 8 10 s. (wet) and dry £ 17. The markets are idle at these quotations.

Printers' Exhibition.

On the invitation of Mr. F. W. Bridges, the organizer, I paid a visit to the Printers' Exhibition on the opening day. It is being held in the Agricultural Hall, London, and from a printer's point of view was excellent, but from a papermaker's point disappointing. One would imagine that British papermakers would be quick at jumping at the opportunity to display their mill's work before the printer. However, the show made by the agents, merchants, and manufacturers, that did take the advantage of the exhibition was such that one could not help but admire. Lindermeyer and Johnson Paper Co., Ltd., amongst other things made a nice display of the American Writing Paper Company's brands of paper and boards.

THE SITUATION IN BRITISH COLUMBIA.

With many contracts that extend far into the future, the Pulp and Paper industry in British Columbia may not be as hard hit as in Eastern Canada. On the other hand it is certain that there will be no new developments in the industry for some time to come.

By keeping the wheels turning the companies in this province have helped the unemployment situation very materially and in one or two instances it has meant some pretty close figuring by those at the head of the organizations to accomplish this.

Had there been large reductions of the working forces or shut-downs it would have meant the addition of upwards of 2,000 men to the unemployed ranks.

New business is uncertain although a hard drive is being made to secure orders on a profitable basis.

WHERE SOME OF THE RIORDON MONEY WENT.

The Pulp and Paper Magazine is no more interested in the Riordon Company than in any and every other mill in Canada. This little story is told simply because it seems that a good many people have overlooked certain features of the situation which it seemed to us only fair to make known.

In the letter which was issued by the special Committee of Directors of the Riordon Company, intimation was made that estimates of the cost of the new Kipawa mill were greatly exceeded by actual construction costs and that this may have been an important factor in precipitating the need for emergency financing. The Pulp and Paper Magazine thought that the industry might be interested in knowing something more of this subject and after further investigating the situation, the following information was gathered. It may be mentioned incidentally, that the editor has personally seen the plans and the plant at Temiskaming and thinks that there are possibly some people connected with the industry who do not fully appreciate the objects and ideals which were in view when the Kipawa mill was projected. There is scarcely any question that a mill which would produce at lowest cost, as this mill is designed to do, must necessarily be the last word in mechanical efficiency, protection from contaminating dirt and effective for maintaining the acme of strength and cleanliness. Where a European mill can afford to pick out dirt and shives by hand, a Canadian mill to produce the same quality must eliminate or prevent the entrance of such materials by mechanical means and this requires higher initial expense for such perfection of construction and equipment. It is only by such measures that a Canadian mill can produce the highest grade of chemical pulp. As pointed out in the description of the mill published Sept. 16, 1920, nature does a lot of work free, because of the design and construction, where other mills will pay expensive labor. Money has been well spent to save operating cost. Records of results already show that unusually low labor charges are an accomplished fact.

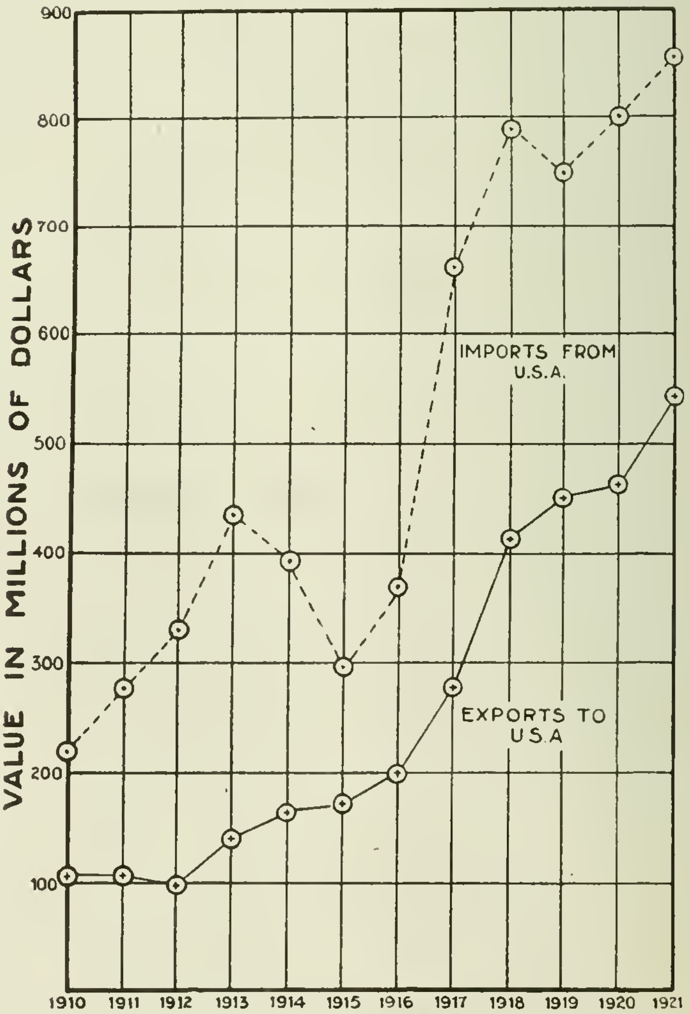
To return however, to our subject. The public probably does not realize that the Kipawa plant was designed for a capacity of 500 tons a day and that a large amount of construction work has been done once and for all to provide for certain factors necessary to the carrying on of the plant at full capacity. Among these items a few will be mentioned. Beginning at Kipawa Lake we find a storage reservoir of ample capacity and a pipe line 2¼ miles long to a forebay just above the power house which is of ample capacity and equipped with the necessary gates and flume outlets to provide all the power that will ever be needed by the mill. As mill construction progresses it is not only necessary to carry a short flume from the forebay to the lake shore as additional generator units are installed. In this connection all of the subaqueous work at the power house is complete so that 4 power units can be installed and housed as mill capacity is increased. Considerable other work on Lake Temiskaming has also been completed. This includes the booms and provision for water transport of logs together with the log haul and practically all of the barker equipment.

Proceeding to the mill we find that the wood storage ground has been entirely levelled, tracks laid, and fire protection lines installed for full mill capacity. This is without doubt the finest wood storage layout in Canada and should prove exceptionally economical. Provision has also been made for the unloading and handling of wood brought in by rail from settlers and jobbers. At the mill we find that excavations have been made and foundations laid considerably in advance of the presently erected digesters, blow pits, and steam plant.

It might be worth while to recite also, a few points with regard to the work of the contractors. This takes us back to the winter of 1917 and 1918 when the plans and estimates were completed. Since that time everybody knows what happened to labor and other construction costs. The workman in many instances did about half a day's work for previously undreamed of wages. It was necessary also to provide complete housing advantages and some social attractions for a new town in the wilds and better meals were served than most of the workmen had been previously accustomed to. In addition to this, freight rates and cost of materials continued to increase and Government taxes were also unexpectedly levied. It is true that on certain portions of the work the original estimates were considerably overrun, partly due to the urgent demand about a year ago for pulp and the necessity of rushing construction to meet it, but it is only fair to mention that on several other portions the construction cost was less than the estimated expenditure.

CANADA'S TRADE WITH THE UNITED STATES, 1910-1921

(Fiscal Years ending March 31 of Each Year)



Exports are climbing a little faster than imports.

News From Europe

The Effect of Shorter Hours in the Mills.

Reports from Holland to the Industric und Handelszeitung show that the reduction of the working week from 50 to 45 hours has caused a rise of 10 per cent. in the cost of commodities. To obtain the previous output new shifts must be hired which have a bad effect on the other men, who naturally make less effort and work more slowly. The belief that shorter hours would refresh and brace the energies has been illusory. As a matter of fact, three instead of two shifts have been necessary, with great loss of time, efficiency, and precision. Yet wages have been kept at the high level. —PAPPEN-und HOLZSTOFF-ZEITUNG, April, 15, 1921.

Canada's Paper Industry in Foreign Eyes.

The German and Scandinavian journals are devoting much space to descriptions of Canadian mills and processes of pulp and paper making. In a review of the causes of the development of paper making in Canada, the Industrie and Handels-Zeitung observes that it is due in a large measure to technical skill and new inventions. The "new invention" in particular, of making a useful pulp out of certain resinous varieties of fir assures a long period of success.—Industrie und Handels-Zeitung, April 7, 1921.

The Study of Wood Cellulose Chemistry at Abo, Finland.

The Association of Wood Working Industries of Finland have appointed a faculty of chemical and technical members, including a professor of the chemistry and technology of wood. A committee composed of Professors Ossian Aschan, Peter Klason and Svante Arrhenius, laid out the plans—an indication, if one were needed, of the excellence of the work. Professor Erik is the present holder of the chair.—Papir-Journalen, March 12, 1921.

The German Paper Industry and the "Sanctions" or Penalties.

(It might be well to read a little between these lines, but not too much.—Ed.)

The paper industry, like every other undertaking, in Germany, is suffering from the effects of the "sanctions" imposed by the Entente. In March, for instance, the manufacture of paper goods declined 50 per cent. The duties have laid a vast number of the population under direct contribution. Yet the total income of the nation is considerably less than in the year preceding the Rhine customs.

For this draft on their earnings the Germans complain that they are not even guaranteed the assurance or security that they will be allowed to work. When the establishment of customs on the Rhine was mooted, it was generally condemned by its critics on the ground of the enormous cost involved in collecting duties regularly. The authors of the plan did not take into account the fact that the cancellation of orders both from the interior and from abroad, would steadily subtract from the customs a considerable part of the estimated receipts. After a few weeks of trial the separation of Germany into two parts has become an unprofitable scheme and placed the Entente in a difficult situation.

But politicians at Paris have allowed their seeming success to obscure the fact that industrial taxation, as planned and carried on, could not survive undisturbed. Their policy of destroying credit and industry is rapidly transforming the nature of the operations in business, and already capital is seeking new markets in Russia. In spite of urgent appeals to "support the occupied territory," new contracts are being held up, orders are being cancelled, and capital is fighting shy of investments in these places, for customs are not among those things that can be passed on to the consumer beyond their reach.

Tendencies are moving in the direction of the cessation of business with the regions included in these customs, with the result that the effects of the duties have nullified to a considerable extent the advantages anticipated on their introduction. Meanwhile as the industrial classes are working, and working hard, the products of their labor are being devoted to trade with the interior of Germany. It is stated, for example, that the Frankfurt Fair was remarkable for the extent and quality of the paper, books and machinery in the paper branch. Having educated the working classes to the point of laboring systematically for the future, it should not be difficult to carry the process a stage further to industrial union with the States of Eastern and Southern Europe.

It is most remarkable that the French occupation of German cities has been received with extraordinary composure. The folly of the attempt, which costs France far more than she can recover, is patent. The supreme achievement of the French in this business is that it has inculcated habits of thrift and work in that section of the community generally inclined to improvidence. It would in fact appear that the present system of industrial subjection imposed by the French would produce considerable losses to them, and considerable benefits to the toilers.—PAPIER-MARKT, April 20, 1921; Wochenblatt fur Papierfabrikation, April 23, 1921; Papier-Zeitung, April 28, 1921.

The Paper Mill at Prague.

In the report of the Prague Company it is said: "The two years of peace have shown unfortunately that we are far from normal operation and orderly economic or industrial conditions. The increasing rise in the cost of materials and in wages are evidences. As an example the following figures will serve:

	1919	1920
Wages	2,321,230.04 kr.	4,981,133.23 kr.
Maintenance	576,062.12 kr.	1,366,250.35 kr.
Fuel	930,433.09 kr.	3,248,769.97 kr.

The cost of 100 kilograms of paper has increased 275 per cent. over 1919. However the balance sheet shows that the mill has been able to pay a 5 per cent. dividend.—ZENTRALBLATT fur die PAPIERINDUSTRIE, April 15, 1921

Better Prospects in Sweden.

According to the Svensk-Pappers-Tidning, there are signs of a renewed demand for Swedish paper and pulp. While there is no actual business at present, the market will probably become active toward the end of Summer. A favorable factor is the falling off in German competition, owing to the 50 per cent. levy on German exports.—Svensk Pappers-Tidning, March 1921.

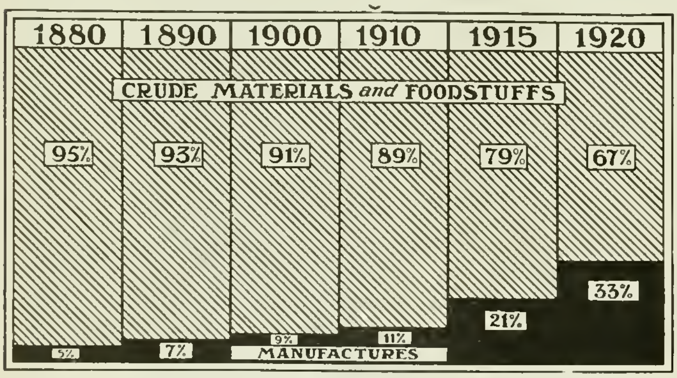
The Ruin of Europe.

The prediction of a Spanish writer that the interference of the United States in European affairs, though it may please some, has increased the discontent of the workers, is certainly a new line of thought. "Europe," he says, "is dethroned politically and commercially, and whether we like it or not, America is today the strongest and richest power in the world, and her money and resources are illimitable. This is profoundly true, but unfortunately it is also true that the United States is no longer democratic, but an imperialistic power. This power," continues the Spanish writer, "is formidable; the evolution of its economic and social life has followed the same course as the European. During its best phase America was concentrated on itself; its spirit was democratic. But the development of capitalism has since evoked the tendency to imperialism, and inspires it to intervene in international questions. The war has reduced France and England from the postion of creditor to that of debtor nations, owing financial allegiance to America. The weakness of Europe is the strength of the United States, and also Japan."—ERGOS, April 1921.

(The Spanish writer's argument is worth noting. Owing to the world upheaval caused by the war, which has greatly lengthened the shadow of the United States, industry in Europe is in a great measure paralyzed.—P. B.)

GROWTH IN CANADA'S EXPORTS OF MANUFACTURED GOODS, 1880-1920.

The graph shown below records the increase in the percentages of our exports of manufactured products in periods from 1880 to 1920. Exports of crude materials and foodstuffs are represented by the shaded lines; manufactured products by the heavy black. The significance of the percentages shown is that they indicate a steady and rapid increase in the growth of the exports of Canadian manufacturing industries. In 1880, 95 per cent of our exports consisted of raw materials and foodstuffs, and 5 per cent of manufactured goods. This proportion has steadily decreased, until in 1920 raw products were represented by 67 per cent of the exports, while exports of manufactured products had risen to 33 per cent.



MATTAGAMI PULP TO REOPEN MILL.

Owing to a slight improvement in the market for unbleached sulphite pulp, it is proposed to reopen the mills of the Mattagami Pulp & Paper Co. at Smooth Rock Falls, Ont., next week. The plant has been closed for about a month, owing to dullness in the sulphite market, but some demand has been received, resulting in the decision to recommence operations. The plant is located on the Mattagami River west of Cochrane. The sulphite mill has a designed capacity of 45,000 tons per annum.

CONNECTICUT VALLEY BRANCH OF THE COST ASSOCIATION BUSY.

The eighth regular meeting of the 1920-1921 season was held on Monday evening, April 18, 1921, at the Hotel Nonotuck, Holyoke, Mass, with an attendance of forty.

The meeting was a most lively one, and filled right up with the most interesting problems. Mr. J. A. Reilly, President of the Local Association, opened the meeting with a brief talk on "The Tying in with the General Books." He illustrated his talk with various forms which are used at the American Writing Paper Company. During this period, the attendants took a most active part in the meeting by asking many questions in connection with Mr. Reilly's explanation of this problem.

The next problem which was presented was "The Correct Method of Retiring Un-Or-Overearned Burden and Burden Variances from the Cost Ledger to the General Ledger," This subject aroused a real spirit of interest, and a good number of attendants took part in the discussion. The problem as presented, was as follows:

At the closing of the Cost or Mill Ledger, an Unearned Burden was arrived at amounting to $7,000 approximately. The reason for a part of this Unearned Burden was found to be the arriving at too low a departmental rate. After determining a more correct rate and applying same to hours of operation, the difference arrived at, according to general sentiment, was a legitimate additional charge to Cost of Goods Sold or Finished Stock Inventory. This difference reduced the original Unearned Burden of $7,000 to $3,000 approximately. The question was then brought up as to the disposition of this $3,000 and it was answered as follows:

If the account in question, through lack of operation, failed to earn its Burden, it must have reflected saving in the various elements that make up Burden. This being true, it would resolve itself into a credit variance, and should offset the loss through lack of operation (with the exception of the fixed charges in this account). And they, being standard, would accumulate regularly as an expense, whether they were incorporated in the Burden or written off as an expense. Consequently, this would mean that there has been arrived at both a loss and gain item in this account, which should be retired to the General Ledger under the same account—namely, Un-or-Overearned Burden and Burden Variances. These accounts would be closed periodically and drawn off on the Loss and Gain Statement.

LABOR TROUBLES RELATIVELY FEW.

"Based on a general survey, it is found that not far from one half of the manufacturing plants in the paper industry do not have and never have had any disturbances in their internal industrial relations," declared L. M. Alexander of Port Edwards, Wis., chairman of the industrial relations committee in making his annual report to the convention of the American Paper and Pulp Association. "The other part have had from minor to excessive difficulties, no matter whether the labor is organized or unorganized, whether the industry is operated upon closed or open shop principles. We think with proper consideration of this subject we may be able to develop for the benefit of all, methods that could help work for peace and harmony in this industry."

EMBARGO OR EXPORT TAX ON CANADIAN PULPWOOD.

Anyone who can travel on our railroads and see the immense amount of pulpwood piled alongside the tracks all through Quebec, Ontario, and New Brunswick for shipment out of the country, or who will visit Sherbrooke, Campbellton, or McAdam in the busy seasons and see trainload after trainload of pulpwood being shipped away from our Canadian mills, or will visit our seaports and see steamerload after steamerload shipped to Portland, Maine, knowing that every trainload and every steamerload is shortening the life of our pulp and paper and lumber industries, and can see this all going on and not lift a hand to help stay the same, is to say the least, not a good Canadian.

The American mills in their activity for the removal of the embargo on the shipment of Crown land wood do not expect to succeed in having any restrictions removed, but are simply agitating this question with the hope that it may prevent the placing of a further embargo or export tax on the shipment of fee land wood, which is now furnishing them with a million and a quarter cords of pulpwood annually and shortening the life of our mills to this same extent.

This agitation is instigated principally by one of the larger American paper companies, that has a small supply on its own lands in the United States, and is therefore, selfishly interested. Many American manufacturers freely admit that they are surprised that Canada has not taken steps to prevent the export of pulp wood long before this.

Our first duty should be to stop the shipment of raw wood out of the country; our second, renewed and increased fire protection for our forests; our third reforestation.

I say first stop the shipment of wood. Why should we protect our forest from fire and plant seedlings while we are continually shipping mature trees out of the country faster than we are planting them?

The next matter of importance, is the retention for our own manufacturers of our other raw materials, and the further development of our coal mines and water powers.

Furthermore, as far as possible, our railroads should be run by electricity rather than by coal. The saving that we should make by the prevention of the loss of the timber alone, which is burned up annually by our railroads, would more than pay the interest on the entire cost of their electrification.

An actual embargo is the only measure that will prevent the shipment of raw pulpwood to the United States. However, an export tax of $10.00 per cord is the next best measure. This would not check shipments in any way, but would at least give Canada an additional revenue of $12,000,000.00 per year on the million and a quarter cords now being shipped annually to the United States. This $10.00 per cord would simply be paid by the American consumer, so that, by the imposition of this tax, no Canadian interest would be affected or injured in the slightest degree, and the country would be receiving some slight compensation for the loss of one of its most valuable assets.

Surely a measure that will increase Canada's revenue to the amount of $12,000,000.00 without detriment to any one in the Dominion calls for immediate enactment.

FRANK J. D. BARNUM.

PRESIDENT W. J. RAYBOLD ON TRADE ORGANIZATIONS.

The following is an extract from a letter of the new president of the American Paper & Pulp Association.

The last few years have demonstrated the great value to industry of trade organizations. The accurate information in regard to market conditions placed before the business man by modern trade associations makes competition healthy and constructive instead of unhealthy and destructive. It increases the chances for success and decreases the number of failures. Better and more uniform methods of cost accounting made possible through these organizations have been of great value to the public and the worker as well as to the manufacturer.

I believe there is a new era opening for trade organizations. Experience during the war period convinced business men generally that they are not only helpful but necessary to business success.

WALTER J. RAYBOLD.

Under its new Articles of Association there has been been opened up a large field of activity for the American Paper and Pulp Association that need not encroach in any way on the work of the divisional associations.

Of course the success of an organization of this kind depends almost entirely upon the hearty co-operation of its membership. Your present officers feel that they will have this kind of cooperation from every member, as only through effective cooperation can the association be made of the greatest service to our industry.

We are passing through a period of depression, but in the opinion of many prominent men in the industry we have passed the worst and can look forward with hope to the future.

FRENCH JOURNALS ON PAPER MAKING.

The following list of French paper trade journals has been very kindly furnished by Mr. Héry, of "Le Papier":

"La Papeterie", 9 Rue Lagrange, Paris V°.

"Le Moniteur de la Papeterie Française", 154 Boul. Haussmann, Paris VIII°.

"Papyrus", 30 Rue Jacob, Paris VI°.

"Revue Universelle de la Papeterie et de l'Imprimerie", 79 Rue du Cherche-Midi, Paris VI°.

"Le Papier", 16 Rue du Rocher, Paris VIII°.

The Rollands are Specialists in High Grade Papers

By A. R. R. JONES.

The first mill in Canada to make finished high-grade bond and writing papers was built in the year 1882 at St. Jerome, in the Province of Quebec, by the Rolland Paper Company, Ltd. Of this Company, the late Senator J. B. Rolland was the founder, and the mill erected at St. Jerome, which is a thriving town in Terrebonne Co., on Rivière du Nord, 33 miles from Montreal, with a present population of some 5,300 people, was an exceptionally fine one for those early days in the history of the paper industry in Canada. After the late Senator Rolland's death, his work was carried on by his two sons, the late Hon. J. D. Rolland and Mr. S. J. B. Rolland, the present president of the Company.

The Company has always, from its earliest days, specialized in high-grade products, and the site at St. Jerome, by reason of the excellent water-power which has been developed and of the abundant supply of clear, fine water enjoyed there, has been found ideal for its purposes. The mill was equipped to produce a loft-dried and tub sized paper of the highest grade, and, from the very first, specialized in an all rag paper, which was watermarked Superfine Linen Record. In 1885 — three years after the foundation of the Company, — this paper obtained the Gold Medal at Antwerp. In 1893, it received the Highest Award at Chicago, and, in 1900, it was awarded the Grand Prix at Paris.

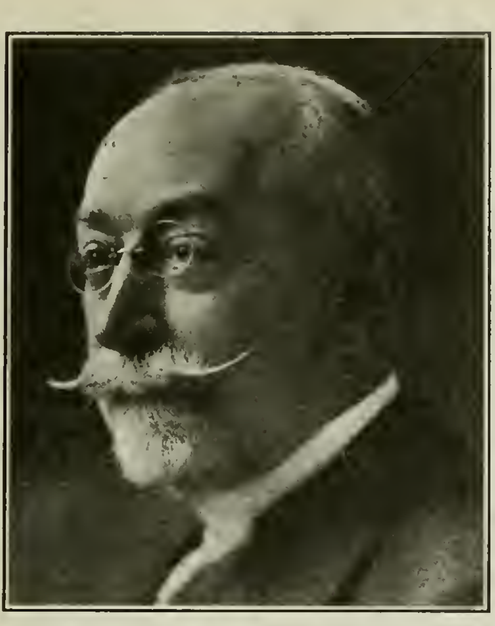
Since its erection, forty years ago, the mill at St. Jerome, has been repeatedly enlarged and improved to keep abreast of the most modern methods of papermaking. In 1912, the Northern Mills Company at Mont Rolland was taken over by the Rolland Paper Company, Ltd. This acquisition has enabled the Company to increase its production and make a complete line of bond, writing and ledger papers. Mont Rolland is beautifully situated about 40 miles from Montreal, among the Laurentian hills. Its population is composed almost entirely of the employees of the Company and their families, and the mill itself is generally regarded as one of the model mills of North America. The location of its various manufacturing units is exceptionally well planned, and the plant is well organized and kept in splendid condition in every way.

Indeed, it may be said of both mills that they are in first-rate order with every machine in shape to produce the utmost in both quality and quantity. Considerable improvements to both of them have been made recently and the equipment and buildings of both have been renderd as efficient as it is possible to make them. At Mont Rolland, a wing has been added, in which an increase has been made in the number of beaters, and additions to the machinery, including tub-sizing equipment, have also been installed.

In addition to the Superfine Linen Record—to the manufacture of which and like qualities of the highest grade the St. Jerome mill is exclusively devoted — other well-known watermarks of the Company are the Earnscliffe Linen Bond (in which quality the Mont Rolland mill specializes) the Empire Linen Bond, the Colonial Bond and the Mount Royal Bond. The special insignia of the Company, is the shield bearing the letter "R". This is its trade-mark and is also largely used as a watermark. And it is safe to assert that it is a guarantee of the superior quality of the product that bears it.

The Rolland Paper Company is a family concern. As has been stated Mr. S. J. B. Rolland, who is at present visiting Europe, is the president of the Company. His nephew, Mr. J. P. Rolland, son of the late Hon. J. D. Rolland, is vice-president. Mr. Jean Rolland, a son of the president, is general manager of the Company. Mr. Olivier Rolland, another son, is manager of the Mont Rolland mill, while a third son, Mr. Henri Rolland, is at the St. Jerome mills. Thus, starting with the late Senator J. B. Rolland, three generations of the family have had the active direction of the Company's operations and policy. This is in full accordance with the traditions of long established mills in old France, where mills were operated by the same family for several generations, apart from the record of Price Brothers and Company, Ltd., there can be few families in Canada

THE ROLLAND PAPER CO., LIMITED
ST. JEROME MILLS.



MR. S. J. B. ROLLAND, President. Rolland Paper Co., Ltd.

whose record, in this respect, equals that of the Rolland family.

As is, perhaps, natural with a family concern, such as the Rolland Paper Company, Ltd., the relations between the Company and its employees are particularly happy and cordial. Over thirty-three per cent. of its male employees have been with the Company more than twenty years, and seventy per cent. have been with it over ten years. These facts constitute a striking tribute to the contentment and satisfaction that the employees, as a body, experience in their employment. Further than that, service of such considerable length in the one establishment has resulted in giving an exceptionally fine experience to the great majority of the employees and in making of them real experts in their various branches of work. It is, no doubt, largely due to this length and loyalty of service, and to the harmonious relations that subsist between employers and employed, that the Company has been able for so long, and is able today, to maintain undiminished and unimpaired, the remarkably high standard of quality of the products for which it is noted.

MR. J. P. ROLLAND, Vice-President, Rolland Paper Co.

A word should here be said as to the great and genuine interest that the Rolland family has consistently displayed in the communities in which its mills are situated, and the majority of the members of which are connected with those mills. Mr. S. J. B. Rolland, was for fifteen years Mayor of St. Jerome, and established a Chamber of Commerce there. Mr. Jean Rolland, the general manager of the Company, was the first resident manager of the Mont Rolland mill when it was established. He evinced keen interest in the living conditions of the workers there — an interest which is continued by Mr. Olivier Rolland, the present manager at the Mont Rolland mill — and was instrumental in the establishment of schools and the advancement of education generally. He has been Mayor of the town of Mont Rolland. Mr. J. P. Rolland, vice-president of the Company, is manager of the head office in Montreal.

MR. OLIVIER ROLLAND, Manager, Mont Rolland Division.

The Company, it should be mentioned, has branch offices in Toronto and Quebec city. Its product is distributed all over Canada through the jobbers.

Mention should not be omitted of the really superb book, "From Rags to Writing Paper", which the Rolland Paper Company, Ltd., has just produced and copies of which it is presenting to its friends. The contents of the book in question consist of reproductions of twelve sketches by Mr. C. W. Simpson, R.G.A., with descriptive notes on the process of transforming rags into writing paper. The sketches are a complete success in visualizing this highly-complicated process. The text explains the meaning of the sketches in the clearest and most intelligible terms. And the whole presented in chaste, yet sumptuous, form, constitutes a veritable work of art such as is eminently worthy of the reputation of the Company from which it emanates.

P. Heenan, Ex M.P.P. addressed a meeting at Dryden, Ont., of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers, a few days ago.

The Nipigon Fibre and Paper Co., Limited, commenced the manufacture of pulp at Nipigon last week. About forty men are employed in the plant at the present time.

The Coal Situation; Spring 1921

The following special letter has been sent to members of the American Paper and Pulp Association:

Last year, where there was a promise of an acute situation in the coal industry, the American Paper and Pulp Association sent to its members a printed letter attempting to analyze the situation as it then existed, and later in the year another such summary of conditions was distributed.

The strike in England and the under-production as well as under-consumption in this country, seems to warrant another investigation this spring, and the result is given below.

Production.

It has been estimated that 550,000,000 tons of soft coal constituted a normal yearly production sufficient for the United States and its export demand. The "line of safety" in soft coal production has been drawn roughly at 10,000,000 tons weekly. Production below this figure, if continued for any material length of time, invariably results in a subsequent shortage. Present production has fallen to about one half the normal average capacity production of the mines. There is no demand; consequently both price and output have declined.

Average Weekly Output.

During	Tons
November	11,685,000
December	11,429,000
January	9,613,000
February	7,728,000
March	6,592,000
April, estimated	6,300,000

"Black Diamond," a trade journal of the coal trade says that production for the last week of April reached new low levels.

One prediction as to production for 1921, on the basis of the first three months of the year, is that the total for the year will be from 100,000,000 to 125,000,000 under that of last year, but part of the drop is due to heavy production the latter part of 1920, when industries accumulated large stocks, before curtailing operations. Foreign demand which took 21,000,000 tons last year, will probably be quite light this year, compensating in part for the prospective underproduction.

Transportation.

Although it is generally known that there are thousands of idle cars today it must be recognized that transportation is the most serious problem confronting the coal industry. Unfortunately, there is a seasonal demand for coal, which complicates the transportation situation especially during the fall and winter months. If it were possible to spread the demand, and consequently the haulage, over the entire year, the difficulties of coal transportation would be materially reduced.

At present there is no shortage as far as transportation facilities are concerned, owing, largely, to decreased production. It is estimated by Mr. Daniel Willard, Chairman of the American Railway Executives, however, that the railroads of this country are 40,000 cars short of a normal carrying capacity, as far as coal is concerned. This is equivalent to transportation facilities sufficient to handle approximately one-fifth of the entire coal supply of the nation.

From the above it would appear that as soon as a normal demand revives and production, consequently, increases, consumers may have difficulty in getting prompt shipments of coal. This difficulty, as well as the price of coal would probably be increased by any general business revival.

Rail Rates.

The present rail rate agreements extend until July 1, 1921. A reduction in rail rates, before or after July 1, probably would not have marked effect on the price of coal. It therefore would seem inexpedient for buyers to hold off in contemplation of cheaper coal from reduced freight rates.

Commercial Stocks on Hand.

The United States Geological survey has published the results of a questionaire on the commercial stocks of coal, on April 1, summarizing replies received up to April 27. This survey shows that production declined steadily from December, 1920 to March 31, the end of the coal year. In March and early April the soft coal mines were working on an average only two or three days a week.

"Before," says this survey, "it is assumed that the slump in the output foretells a shortage of coal, two other facts must be taken into account: First, that the slump was preceded by several months of heavy production; second, that the slump in output was accompanied by a great cut in consumption."

A total of 3,779 plants reporting, shows stocks of soft coal on hand as follows: January 1, 1919, 18,004,000 tons; April 1, 1919, 12,464,000 tons; March 1, 1920, 7,097,000 tons; January 1, 1921, 13,770,000 tons; April 1, 1921, 11,159,000 tons. The plants on which computations are made are identical for the various dates given.

View of Senator Elkins.

A significant letter has been written to the association by Senator Elkins in which he urges the ending now of the buyers strike against the coal industry. Failure to follow this course he says will mean a repetition of last year's "famine" conditions. He says prices are as low as they can go and that the present wage scale stands until April 1922 and that no cut in rail rates can come in time to correct the present situation. He suggests seasonal freight rates to expedite moving of coal in years to come but this cannot be done in time to meet this year's situation.

Conclusions.

Not since pre-war days has the volume of coal production fallen so low. As a result, coal is cheap, the mine price of good coal ranging between $2.50 and $4·00 per ton, depending on grade. Unless production costs fall materially, which is unlikely, it is probable that coal prices will not go appreciably lower. In the past it has been customary to advance the mine price of anthracite coal 10 cents per ton each month through the summer.

For the time being, there is sufficient rolling stock to transport the mine production. There is not enough to handle a normal demand however. The increased demand of fall and winter will stimulate production, which will increase the difficulties of transportation. There is little or no opportunity to store coal at the mines. This must be done in the retail yards and the consumers' bins.

Owing to the conditions discussed above, it is recommended that consumers place their orders now for their regular needs, as well as for a small surplus, contracting of course to the best advantage possible, and taking delivery through the spring and summer.

PULP AND PAPER NEWS

The Association of Canadian Advertisers will hold a three-day Convention at Montreal commencing on the 3rd June. The Convention will be held at the Windsor Hotel. There will be several booths, and the Canadian Pulp and Paper Association has made arrangements for having a booth of its own, at which samples of various papers will be displayed for the benefit of visitors.

There has been no development of any importance during the past week, relative to the unfortunate strike involving a number of mills in this country as well as in the United States. But the opinion is being freely expressed in many quarters that J. T. Carey, as a strike leader, is not showing himself much of a strategist. If he had wanted a regular stand-up fight to a finish, over the question of the proposed wage reduction and alteration of working hours, he should, it is being said, have called a strike in every mill, with the object of paralyzing the industry. Instead of taking that bold course, however, he has gone to certain centres, where possibly, he had reason to think that his power was not so great as in others, and he has settled, at those particular points, on an agreement which is not an agreement. That is to say, he has allowed some mills to keep running at the old rates and on the old terms, subject to any revision which may be made by their competitors. This looks uncommonly like playing favorites. For, at other points, men have been constrained to lose their pay as from the 1st May and not only to lose their pay but to continue on strike without any prospect of adequate strike pay being forthcoming. It is needless to emphasize the embarrassment this has caused to storekeepers and others in the localities where the men are out on strike. But there is reason to think that some of the men themselves are getting very restive. The truth is, they feel they have been played the fool with. Most of them must realize that some cut in wages is bound to come, and that every day's delay is likely to make the settlement, when it is made, a worse one from their point of view, because every day the cost of living is going down and hence wages are increasing in purchasing power. So that today the grounds for resisting a cut in wages are not as strong as they were two months, or even one month, ago. At one centre, about the midle of April, the men were offered a year's agreement with a fifteen per cent. reduction only. They refused this, however, and now they will have to take their luck with the rest. It looks very much as though, by the time a settlement is reached, the men will have some cause of complaint as to the "generalship" which has been shown on their side.

Mr. George M. McKee, of the Donnacona Paper Company was in Montreal this last week.

Fifty printing plants at Buffalo, N.Y., representing 90 per cent. of the city's productive capacity, have announced an agreement to maintain open shop and operate on a basic 48-hour week. Union demands, the announcement says, are entirely unjustified by existing economic conditions," and the agreement signed pledges with fifty firms not to enter agreement with any labor organization covering hours, wages or conditions of employment. The union printers have been on strike since May 1 for a 44-hour week.

Since the Directors' Committee on May 6th sent a circular letter to the shareholders of the Riordon Company informing them that their company was in a desperate position, and that unless they subscribed to the new bonds being issued to tide the company over its temporary position, liquidation was the only recourse, numerous enquiries have been coming in asking for additional information on the company's assets, its annual interest charges and its earning power in periods of depression, a reply to the request has been compiled by the Royal Securities Corporation and went forward to shareholders of the company this week over the signature of I. W. Killam. The letter is encouraging. It states that at a very conservative figure the company's properties are sufficiently valuable to cover the debts of the company and leave $15,000,000 for the $10,000,000 8 per cent cumulative preferred stock. An authority on valuations of such properties states the figures given in the letter are conservative; the letter itself has the air of being so at least. After valuing the properties at cost, for example, it goes on to say that as the Kipawa plant was built at the top prices it had been thought advisable to subtract $5,000,000 from its valuation; the timber limits of the Gatineau, which have been considered the finest in Canada taken as a whole, are put in at $1,000 per square mile, making a total of $12,000,000 as the valuation of the company's forest lands. Altogether the company is valued, apparently on a conservative basis, at $42,500,000 against a bonded indebtedness, including the Gatineau Company, of $27,000,000.

The annual meeting of the Canadian Consumers' Casein Company, an organization for the supply of casein to the paper users of that product, including the manufacturers of coated papers, was held in Toronto few days ago when favorable reports on the year's business were submitted. The following officers were elected: President, W. C. Copping, St. John, Que.; vice-president, C. N. Ramsay; secretary, H. Gage; treasurer, I. H. Weldon. The company's plant is at St. John, Que. and the annual statement showed that while the last year had shown a lessened turnover, a satisfactory volume of business was done.

Messrs. Warkwick Bros. & Rutter, manufacturing stationers, King Street, Toronto, have just put out a new line of manufactured stationery under the brand name of "Blue Bird", each of the sheets and envelopes bearing an embossed reproduction of a blue bird, which is the symbol of happiness. People who are learned in ornithology know that the blue bird is an inhabitant of Pays Bleu, the fabulous country of our dreams and is an ancient symbol of the folk lore of Lordane. The stationery is put up in pads, papeteries and envelopes and is particularly attractive and artistic. That it promises to be a popular line is indicated by the fact that the first run was entirely sold from samples in Warwick Bros. & Rutter's show rooms before it was off the press.

Mr. George Davidson, Toronto representative of the Howard Smith Paper Company, has gone on a business trip to the Pacific Coast.

Mr. J. G. Gibson, secretary of the Spanish River Pulp and Paper Mills, Limited, has returned from a business trip to Chicago in connection with the bonds of the company.

Col. Thomas Gibson, vice-president of the Spanish River Pulp and Paper Mills, Limited, and also president of the Aero Club, Toronto, met the Santa Marie, the sea plane which is making a flight from Detroit to New York and was a passenger in the craft from Toronto to Buffalo. The plane carrying several passengers landed on Toronto Bay and the crew spent some time in the city before continuing their journey.

EXECUTIVE COMMITTEE OF T. A. P. P. I. HOLDS MEETING.

The first meeting held by the executive committee of the Technical Association of the Pulp and Paper Industry, since the election of George E. Williamson as president, took place at the Strathmore Inn, Woronoco, Mass., on Thursday, May 5, and lasted over Friday. There was a full attendance of members and former president Raymond S. Hatch, was also there to assist the new president. Mr. Williamson is chief engineer of the Strathmore Paper Company, which has mills at Woronoco as well as at Mittineague. The Strathmore Inn is maintained by the company for the comfort of executives and heads of departments and a wing of the building was set aside for the use of the executive committee of T. A. P. P. I. for the duration of their meet-

Much Constructive Work Transacted.

It is safe to say that at no previous meeting of the executive committee of T. A. P. P. I. has so much work of a constructive character been transacted. Plans of a Service Committee for the conduct of group meetings of the association were adopted and arrangements made for the fall meeting of the association to be held under the joint direction of T. A. P. P. I. and the American Pulp and Paper Mill Superintendents' Association at Washington, D.C., York and York Haven, Pa., and Philadelphia, October 18, 19 and 20, 1921. Fred. A. Curtis, Paper Section, U. S. Bureau of Standards, Washington, was named general manager of the meeting for T. A. P. P. I. and he will be assisted by Grellet N. Collins, Philadelphia, and others. Owing to an expected attendance of upwards of 500 members and an already extended programme of mill visitations, etc., it was found necessary to curtail the entertainment features to some extent. It was arranged that trips to York, York Haven and Wilmington be made optional for Wednesday, October 19. This curtails the session in Washington to one day, Tuesday, October 18, but members could arrange to reach Washington on Monday, October 17, and spend the day in seeing the sights of the Capitol.

New Standing Committees Named.

Other business transacted by the executive committee included the appointment of standing committees of the association for the ensuing year, the adoption of a budget and passing on estimates of income and expenditures. Action was taken on a request by the Cost Association of the Paper Industry for an investigation of depreciation in values of machinery and apparatus, a special committee of the association to be named for the purpose.

SWEDISH AND EUROPEAN PAPER MARKET.

The newsprint paper industry in Sweden is facing a most unsatisfactory situation at present. Foreign buyers are not willing to pay Swedish prices, and old customers in England and America are not sending in new orders. Frequent cancellations are reported. Since November 1, 1920, France prohibits the general importation of newsprint paper and has invested La Société pour l'Approvisionnement de la Presse Française (Society for Supplying the French Press) with the sole right to make importations. French consumers as a result pay a price corresponding to that of the French product.

In Switzerland the domestic paper industry has suffered seriously from the importation of German paper. It is reported that two well-known paper manufacturing firms, Oser & Co. and Stöcklin & Co., Basel have shut down. German prices are lower than the cost price of Swiss paper.

Swedish operators in 1920 made plans for a production of 175,000 tons of newsprint paper in 1921. They have been forced to curtail their estimate to about 125,000 tons. The exportation of wood pulp decreased to 8,800 tons in February, 1921, as compared with 38,400 in February, 1920, and 63,000 tons in December, 1920. The exportaton of paper in February, 1921, was 13,600 tons, as compared with 20,300 tons in February, 1920.—United States Commerce Reports.

EXPERIMENTAL MACHINE MAKES COMMERCIAL PRODUCT.

An illustration of what an experimental mill can be in a commercial way is well demonstrated by the quality of filter paper which is now being manufactured by Arthur D. Little Inc., at Cambridge, Mass. A sample of this product which has just been received, shows it to be an exceedingly well felted uniformly close grain paper of excellent texture and filtering quality and particularly free from mineral matter. The ash content of a 9 cm. filter is only .00004 grams, which makes as good a quantitative filter paper as can be obtained anywhere. It has doubtless taken the Little Laboratory a lot of pains to perfect the manufacture of this special paper, which has heretofore been imported, but the successful development of the process proves the feasibility of the continuing from the experimental to the commercial stage and not only points out the advantage of scientific research in the paper industry but also shows that such a plant as that of the Forest Product Laboratories in Montreal can be used for the manufacture of some special grades, at least for Government use, for which it would not be profitable to divert the full size equipment of the ordinary paper mill. We do not advocate Government competition with ordinary business or manufacturing, but we believe that the Government institution is not only justified but should be encouraged in using equipment owned by the people to produce at least some of the material required for its own use. We also advocate more extensive application of scientific research to the problems of the Pulp and Paper Industry and the support of that industry for the facilities available and to be offered by departments of the Canadian Government.

The A. D. L. quantitative filter paper is being sold by Arthur H. Thomas Co., Philadelphia.

UNITED STATES NOTES

Alaskan development plans—particularly those having to do with the establishment of the paper industry there—are receiving increasing attention. In a letter discussing the bill which proposes the creation of the Alaskan Development Board, Secretary of Agriculture Wallace, summarizes the situation in the Northwestern territory as it affects paper-making. He says: "In January last, a small pulp plant began operation in Alaska under a national forest purchase. Two large tracts of timber are now being advertised for sale upon application from interests which contemplate the building of complete newsprint paper mills. Other applications are pending, and there seems a fair prospect that the paper industry will be established in Alaska just as rapidly as market and transportation conditions justify. The purpose is to put the making of paper in Alaska on a sound and continuing basis, developing a perpetual industry by limiting manufacturing capacity to the raw material which the forest will continue to produce."

It is considered likely that the present Administration at Washington will take some action toward removing the restrictions on Alaskan pulpwood lands. President Harding, himself a former newspaper publisher, has evidenced much interest in the reopening of Alaska. The question has come up several times in the cabinet and it is understood that high Government officials feel that the restrictions have probably been carried too far to allow the proper development of these valuable lands. Recommendations are to be made to Congress as soon as an investigation now under way is completed.

The Alaska Gold Mines management has decided to discontinue mining and milling operations and enter the paper making field if satisfactory arrangements can be effected. Negotiations now under way may result in the creation by other interests of a wood pulp and paper industry at the location of the present mill. The company's hydro-electric power development and the question of its further utilization is believed to have led paper making interests to try and establsh at the mine plant. Steps are being taken by the company to dispose of mine equipment and such portions of other facilities and materials as would not be useful in pulp and paper making.

Forest fires, which raged for the greater part of a week in the Adirondacks, were checked last Saturday after considerable damage had resulted, mostly in Franklin County. The greatest amount of damage was said to have been at Meecham Lake, where 800 acres of pulp wood were burned over, and at Cranberry Lake, where a tract of 200 acres, at last accounts, was still ablaze. These two fires, it was reported, had caused more damage than any forest blaze since 1919.

According to J. H. Coverly, secretary of the Los Angeles syndicate interested with Washington B. Vanderlip in Russian concessions, Vanderlip, who is now in Russia, has obtained from the Soviets Kamchatka contracts guaranteeing to the United States lumber rights from which can be secured enough news print pulp to replenish the rapidly vanishing American supply. "It is my understanding," states Mr. Coverly, "that Mr. Vanderlip has this concession, which is entirely independent of the 400,000 square miles of territory which he contracted for on the Kamchatka peninsula, under a contract by which it should be possible for operations to start almost immediately. He has a number of experts working with him on the different problems connected with the concessions."

Christopher Traeger, of Owens & Traeger, Hoboken, N.J., manufacturers of paper boxes of all descriptions, advises users of paper boxes and containers to enter the market for the purchase of their supplies at the present time because prices are about right and buyers will find that they can get them at a much lower figure during the present lull in the trade than they could in the immediate future. The universal use of paper boxes makes the business of Traeger's company an excellent criterion of trade conditions, and the increase in its business in the majority of the lines for which it makes containers is an indication of the steady improvement of general business conditions.

The strike of paper makers begun early in the month continues without any sign of a settlement. Reductions have been acceded to by workers in mills not parties to the expired international agreements, but there have been no arrangements or conferences having to do with the adjudication of differences that led to the walkouts in leading mills several weeks ago. Publishers of the big metropolitan dailies assert that they face no immediate danger of print paper shortage due to the strike. Some of them claim that they have enough newsprint on hand to last them quite a while. C. C. Lane, manager of the New York "Evening Post," intimates that manufacturers, in his opinion, may not be too anxious to see the strike end too soon since it would be to their advantage to have the price of their product recover from the slump in which it had fallen. The strike, he thought, might possibly scare up a few more buyers.

RESEARCH WORK IN ENGLAND.

The Imperial Institute in London has had a report submitted on the investigations (at the Institute) into spent wattle bark as a raw material for use in paper making. A company in Natal is now making arrangements to produce paper from the spent bark obtainable from the tanning extract factories. Steps are also being taken to prepare pulp from papyrus in Zululand.

Posidonia fibre, found on the foreshore of the Spencer Gulf, South Australia, is also mentioned as a suitable papermaking material. At present it is being developed and used in textile purposes and a company is utilizing the fibre.

Pulp from Bamboo is receiving more attention recently, but we must wait for Mr. Raitt's paper on the subject. Mr. Raitt, some months ago, before leaving for India, prepared an interesting paper bringing the subject up-to-date, and as he is one of our greatest authorities we must submit to the inevitable. His previous paper appeared in the "Pulp and Paper Magazine" before 1914.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, May 21.—With a number of the newsprint mills shut down and manufacturers of other grades of paper running light, the pulp and paper situation is in an unsettled state, although from a jobbers standpoint there has been an improvement in the turnover in some lines. As yet, the shut down of the newsprint mills on account of labor difficulties, has had no effect on prices, although, should these wage troubles become protracted and the supply become shortened, a rise in the market would undoubtedly come. Spot lots of news are now selling at 5 cents and as high as 6½ cents and 7 cents. In the pulp field comparatively few transactions are taking place and stocks at the mills are piling up.

WRAPPING PAPERS.—Generally speaking there is a decidedly better tone to the wrapping paper trade, there having been a gradual improvement in business during the past few weeks. The jobbers report that orders are coming in more freely than for some time past and are very optimistic as to the future. The whole tone of the trade is one of greater confidence and there is a more generous response to the salesmen's efforts. Travellers for wrapping paper houses who were in over the last week-end brought in a fair volume of business and reported the outlook for better business as being very good. The northern part of Ontario is proving productive of some very fair business and consumers generally are showing a greater disposition to buy. Stocks, in the hands of the jobbers, however, are light and the mills are not receiving orders of large dimensions.

Although buying is still somewhat cautious, the kraft mills report evidences of a returning confidence in the market and a fair amount of the product is being disposed of. The mills generally are said to be running pretty close to capacity, particularly those mills, like Wayagamack, which are devoted exclusively to kraft. Although there is reported to be considerable stock on hand it is beginning to move more freely and dealers are optimistic as to the future of the trade in this line. During the boom days kraft was being sold as a substitute for manila when that paper was a scarce commodity under an abnormal demand, but now it is back again on its own footing and is becoming firmly established. Prices, both in respect to the paper and kraft pulp remain unchanged from the quotations of last week.

CASEIN.—The market for casein, which is extensively used in the manufacture of coated paper, continues to decline and is now down almost to a pre-war basis. Whereas casein reached twenty three and twenty four cents during the fat years of the paper trade, it is now down to 11c per pound. Most of the paper mills are reported to have considerable stocks on hand.

COATED PAPER.—Coated paper manufacturers are complaining of a slackness in trade although some of the mills are doing a fair amount of business. One leading manufacturer said that he did not look for any great improvement in conditions before next spring and this seems to be representative of the prevailing impression respecting trade in general. The price of No. 1 coated paper during the boom period reached as high as 21½ cents and 20½ cents for No. 2. Today the prevailing prices for the three leading grades of coated stock, F. O. B. mill are: No. 1, $16.35; No. 2, $15.35 and o. 3, $14.60 per 100 lb.

MANUFACTURED STATIONERY.—Although the manufactured stationery trade is passing through a quiet season some of the firms are getting some nice business in the school book line. This is the season when the various boards of education stock up on scribbling books and other school supplies and the manufacturing stationers say that this line serves very nicely as a filler between seasons. The demand for school supplies this season is satisfactory. Manufacturers of papeteries are now booking fall orders and trade in this line is good, although business is rather dull in the blank book department. Most of the manufacturers are fairly busy in their plants and are turning over a fair amount of business. The old days of difficulty in getting raw stock and at reasonable figures are now but a memory and the manufacturers report that both Canadian and American firms are active in their canvas for business.

GLASSINE AND GREASEPROOF.—Manufacturers of these lines report that business is quite and although a fair number of orders are coming through they are of small dimensions, indicating that the consuming trade is still following a hand-to-mouth policy in the purchasing of their requirements. Waxed papers are a strong competitive line and manufacturers of both lines are keen after business. No price changes have taken place recently.

NEW YORK MARKETS.

New York, May 21—(Special Correspondence). —The paper market has developed little change of note this week. If anything, trade activity is on the rise, though the improvement in demand is slow as consumers continue to buy only when pressed by necessity, being as yet unwilling to anticipate requirements. It is plain that the great bulk of paper now being absorbed by buyers is going direct into consumption, which condition, while making for a rather quiet market situation, gives a very healthy tone to such demand as exists. Jobbers are still purchasing paper and board from mills only when having customers' orders to fill, and all down the line current buying is restricted to immediate wants.

An encouraging feature is that matters in the printing industry are on the mend. Heads of several of the largest printing establishments in New York stated this week that inquiry from buyers of printing is increasing quite rapidly, giving the impression that activity in the printing trade is on the threshold of expansion. It is stated that inquiries in regard to catalogues, particularly those printed in foreign languages, were especially numerous, and it can be said that everything points to an appreciable increase in operations in the printing industry in the very near future, thur leading to a larger consumption of paper of a variety of descriptions.

The newsprint market, while fundamentally un-

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changed, is daily acquiring a firmer undertone. Publishers are still reluctant in most instances to add to their stocks of paper, and yet some of them are looking about the trade for available spot supplies and are said to be buying fair-sized quantities of newsprint when it is to be had at what they consider acceptable prices. There is no change in the strike situation, so far as has been publicly announced. Mills shut down by the labor trouble are refusing to issue quotations to other than regular contract customers, and those publishers who depend on open market purchases for their supply of print paper are obliged to do considerable "shopping" about the trade before locating available stock.

Prices on newsprint are steady. Those on spot deliveries to transient buyers range between 5.50 and 6 cents per pound at mills, and most transactions are at the higher figure. Everyone appears to be conserving stocks of newsprint, presumably in the fear that should the strike last for a sufficient length of time, a scarcity of paper would result, and offerings are far from numerous or voluminous. Contract quotations hold at 5 to 5.50 cents and, as stated above, few mills are quoting except to regular customers.

There is no increase in demand of importance for books papers. Supplies are moving in fairly steady fashion to contract buyers and there is the usual routine open market business passing, but buying generally is narrow. Manufacturers are maintaining quotations but, as would be expected under prevailing circumstances, they are frequently accepting orders at price concessions. Evidently book paper producers do not deem it good business judgment to turn down orders at slightly under the figures they quote in view of ruling conditions, and it is understood that they are advising jobbers and distributors to bid whatever prices they consider reasonable enough to land the business and that they will agree to take the order so long as the price stipulated is not too low. This same policy is being practiced in various branches of the paper trade—by manufacturers of fine papers, wrappings, boards and other kinds of paper.

Demand for coarse tissues remains good, and there is a fair trade current in fine tissues, with prices sustained at a basis of around 95 cents per ream on No. 1 white tissue, 20 x 30. Wrappings are moving in moderate quantities, with some jobbers reporting a pick up in demand for kraft paper. No. 1 domestic kraft is quoted on an average of 7 cents a pound though some mills are taking orders at a quarter to a half cent below this figure.

The downtrend in fine paper prices has not been checked, judging from reports of further reductions announced by some mills. It is difficult to name exact quotations on writing and ledger papers for the reason that prices depend on the stock involved in individual transactions. A good grade of sulphite bond can be bought today at 14 to 15 cents per pound for white, while a fairly high quality rag bond is available at from 25 cents upward.

As previously reported, the box trade is showing a little more life. Boxmakers are laying in stocks of board evidently with the idea that better business conditions lie ahead and that board costs are down to about as low as they will go. Quotations are a bit firmer in tone though not actually changed, plain chip being offered at $30 per ton at mills and filled news board at $35 and less.

GROUND WOOD.—The mechanical wood pulp market displays a firmer tone that has been apparent in a long time. While buyers are rather reluctant to absorb sizable tonnages of pulp, the fact remains that a good many of them are looking about the trade seeing what stocks are available and at what prices supplies are to be had, and this makes for a stronger sentiment. Producing mills in a majority of cases seem to be holding on to surplus stocks, probably in anticipation of a shortage of ground wood should the strike of paper and pulp mills workers last much longer, and offering is at a fairly low point. Quotations are on a comparatively broad range, most domestic grinders asking in the vicinity of $35 per ton at shipping points with reports heard of offers by Canadian producers down to around $25 at grinding plants.

CHEMICAL PULP.—On the whole the market for chemical wood pulp presents a quiet appearance, yet there is more buying interest evinced in several grades and prices on these kinds of pulp seem to be stiffening. New grade sulphite is probably the firmest item in today's market and the reason for this apparently is the shut down of pulp mills making this grade of pulp and the resultant decrease in production, thus attracting consumers into the market in search for supplies. Domestic producers are said to be freely refusing $70 and $75 per ton on news grade sulphite; a majority of them asking around $80 and seeming willing not to make sales unless receiving this price. Easy bleaching sulphite is fairly steady at 4.50 to 4.75 cents a pound for domestic grades, and kraft pulp is holding in price at around 3.75 cents on No. 1 domestic kraft.

Very little foreign pulp is coming into the States at present, and trading in Scandinavian fibre is at a low level. Occasionally a sale of spot sulphite or kraft is reported at a rather low price, but otherwise busi-

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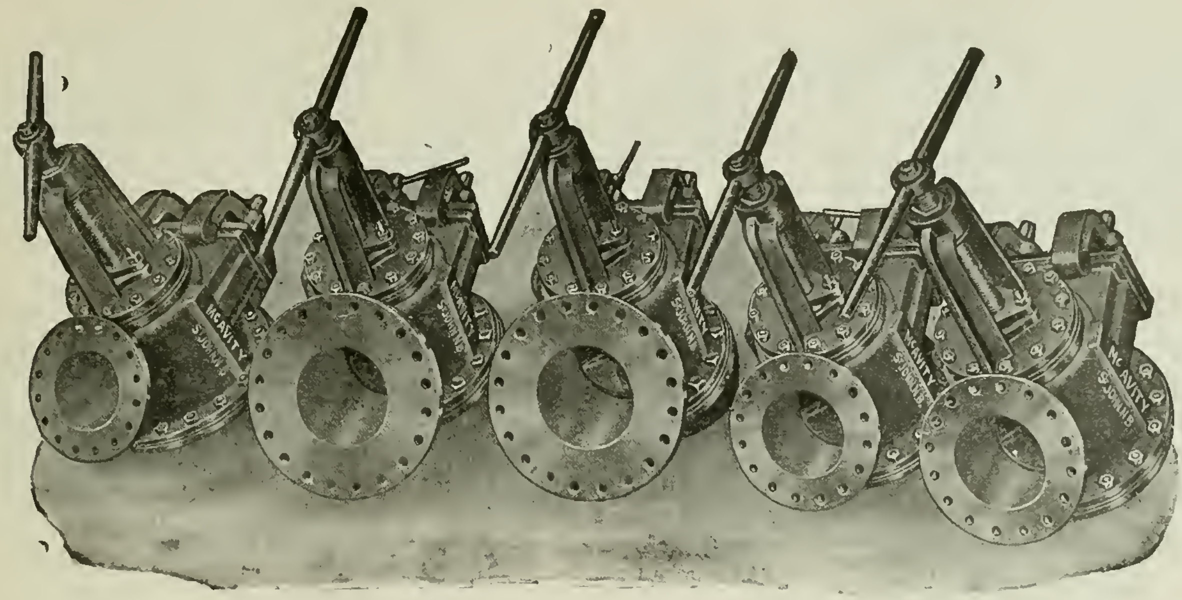

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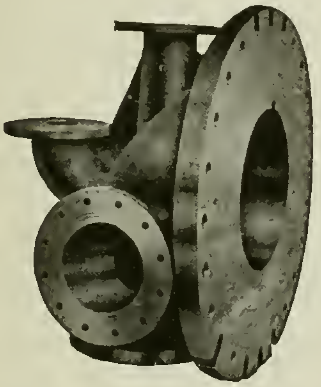

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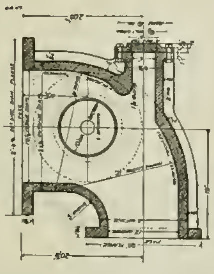

Digester Elbow.

Note thickening of Casting at point of wear, giving longer service.

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WINNIPEG
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ness in this end of the pulp industry is close to a standstill.

RAGS.—Paper mills continue to buy rag stock in spasmodic fashion and at best in small quantities. Dealers assert that not in many years have they witnessed such a long drawn out period of dullness and are wondering when the market will open up in something approaching normal proportions. Aside from several grades, notably roofing material, on which prices are fairly well established, values are altogether nominal, depending on how anxious the packer is to dispose of stock or how desirous the mill is to get a certain grade of goods. Satinets are moving to felt mills in a moderate way at around 75 cents per hundred pounds at shipping points on No. 1 packing and 65 cents on No. 2 stock, and there are scattered sales of old whites and some kinds of new cuttings, but aggregate business is of small importance. Offerings of new No. 1 white shirt cuttings at 10 cents a pound and of No. 1 new washables at 5 cents have been noted, while old No. 1 repacked whites are available at 6 cents and repacked thirds and blues at 2 cents. New blue overall cuttings and new light silesias are quotably lower, the former being offered at 6 cents and the latter at 6.50 cents at shipping points.

PAPER STOCK.—Most grades of old paper show a firmer price tone and slight advances have been scored by prices in quite a few instances. Soft white shavings of No. 1 quality which a short time ago were selling at 2 cents a pound are now held for at least 2.25 cents at shipping points, with some dealers refusing to accept orders on this basis. Magazines are quoted higher at about one cent per pound, while old kraft paper is held for a minimum of 1.60 cents and white blank news cuttings at 1.50 cents. Folded newspapers are unchanged in price at between 35 and 40 cents per hundred pounds, but are under better inquiry, while No. 1 mixed paper continues to move at 25 to 30 cents a hundred at dealers' points.

OLD ROPE AND BAGGING.—Consumers have let up in their buying of old rope to an extent but the market seems fairly well sold ahead and prices are firm at around 4 cents per pound on Manila rope in No. 1 condition. Scrap bagging is mostly neglected and prices are uncertain and mainly nominal, with No. 1 scrap readily available to mills at one cent per pound f. o. b. shipping points.

VISITED LINTER PULP PLANT.

The Stamsocott Company at Hopewell, Virginia, the manufacturers of paper pulp from cotton linters had the pleasure of entertaining a group of representatives from practically all of the high quality paper mills located in Massachusetts on May 5th, 6th and 7th. There was considerable mutual benefit derived from this visit, as steps were discussed and agreed upon for preparing linters in a more suitable manner for the various paper companies. Considerable strides have been made in the development of cotton linter pulp, and it was the universal opinion of all the gentlemen present that this material can be counted upon as a permanent high grade paper making material.

Australia has reduced the import duty on: White tissue paper used for wrapping boxes of confectionery; paper cones for hosiery; and fibre board for binding books.

FISCAL AND TRADE NOTES FROM NORWAY.

By Commercial Agent C. E. SONTUM,
in T. & C. Bulletin.

Norway's Trade Returns.

Christiania, Norway, March, 1921.—From January, 1920 to January 1921, imports decreased from 206 to 124 million kroner and exports from 86 to 68 million kroner. The decline in imports embraces practically all kinds of goods and commodities, with drapery showing the greatest falling off. The recession in exports is chiefly in fish and paper, and, to a lesser extent, wood and chemical products.

It may be presumed that imports will continue to decrease, at least as far as values are concerned, owing to the fact that prices are steadily falling and that the value of the Norwegian kroner is, though slowly, improving. An important factor in the situation is that, as consumers are buying only what is absolutely necessary, a continued recession in prices is confidently anticipated. A wave of economy has passed over the buying public, and they are now purchasing only cheaper qualities of goods, which of course has a strong reflex influence on import values. Further, the import prohibition still in force on all kinds of luxury has now become effective, as practically all goods ordered previous to the prohibition have now been imported, and no import licenses are granted for fresh orders.

The fall in the value of exported goods is, of course, chiefly due to decrease in quantity, but declining prices also are not without their influence on the statistics.

Commodity Price Index.

The trade paper "Farmand" notes that the price index figures for March only show a decline of 2.7 against those for February, and makes the following comment: "After a violent fall in prices over a period of five months, the natural reaction has begun. The decline has come to a preliminary stop, but still we must go through a long process with falling retail prices and decrease in the cost of living and in labour wages. If this necessary process should be arrested, wholesale prices must rise, i.e., the Norwegian currency must again go down."

Norway's Wood Trade.

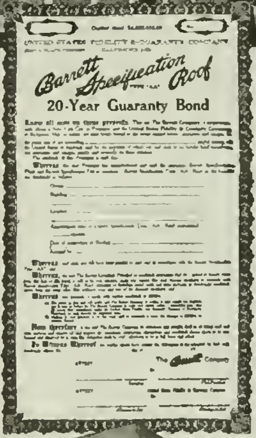
Notwithstanding a number of inquiries, especially from England, for telegraph poles, and from Holland for pile work, there is practically no business doing. Buyers consider prices too high and point to Finland as an alternative market, where owing to low exchange value timber is sold at considerably lower prices than those of her competitors.

Pulp and Paper.

The wood-pulp market is absolutely lifeless, with no prospects of improvement. The mills have therefore decided to close down for one month beginning on April 9, after which suspension resumption of work will be on a scale dictated by the position of the market. Swedish producers are expected to follow the same policy as tho Norwegian.

Norwegian exporters do not take an optimistic view of the paper market situation. Recovery is more of a hope than an anticipation, as the many inquiries made are with the object of sounding the market rather than with the intention of doing business. Notwithstanding the heavy drop in prices which has recently taken place, no improvement is likely until the present large stocks have been considerably reduced.

Shipping and Storage Building



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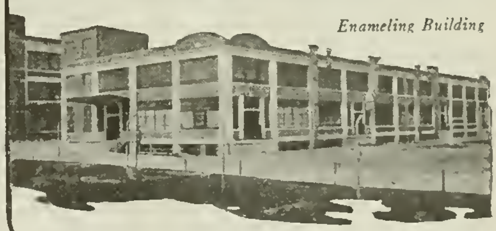

Enameling Building

Four views of the units which comprise the plant of General Motors Co., Limited, Oshawa, Ontario. Eng., Dupont Eng. Co., Wilmington, Del., U. S. A. Gen'l Cont. Canadian Stewart Co., Ltd., Toronto. Roofing Cont.. Carmichael Waterproofing Co., Ltd., Toronto

General View, left to right: Oldsmobile, Enameling, Shipping and Storage

News From Our Advertisers

S. A. McLERNON JOINS C. F. M.

The new head of Pulp and Paper Mill Machinery and Supply Department of the Canadian Fairbanks-Morse Co., Limited, succeeding Wm. Whyte, who recently resigned to undertake new sales work on his own account, is Mr. S. A. McLernon.

The Canadian Fairbanks-Morse Co., Limited, were sorry to receive the resignation of Mr. Whyte and wish him every success in his new undertaking. At the same time, they feel particularly pleased to secure a man like Mr. McLernon to take his place.

Mr. McLernon is a graduate Engineer of Victoria University, Manchester, England. His experience has been almost as wide as the British Empire. After experience in England, he spent some time in Civil and Mechanical Engineering with Jas. J. Niven and Co., New Zealand.

MR. S. A. McLERNON,

Manager, Pulp and Paper Machinery Dept., Canadian Fairbanks-Morse.

His first work in Montreal was Assistant Chief Engineer of Construction on Mount Royal City. The past eight years he has passed in various capacities with the Canadian Explosives, Limited. He has performed important work in connection with the construction and operation of several of the Explosive Company's largest plants. For the last three years, he has held the post of Chief of the Light, Heat and Power Division in addition to being in charge of all mechanical construction undertaken by the company.

Mr. McLernon brings to his new position a wonderful experience which is being offered to the Pulp and Paper Mill industry through The Canadian Fairbanks-Morse Company. He will find many good friends in this industry.

Victor T. Geggin, late New England Sales Manager of Fred T. Ley and Co., Inc., of Springfield, Boston and New York, has severed his connection with that concern to associate himself as Contracting Engineer with Dwight P. Robinson and Company, Incorporated, of New York, Chicago, Dallas, Youngstown, Los Angeles and Montreal.

NEW ASBESTOS GYPSUM HOOD ANNOUNCED.

The trade will be interested in the announcement found in this issue, of a new development in the form of a paper machine Hood for which the inventors claim distinctive advantages, not the least of which are the fireproof and dripproof features.

H. S. Taylor, Ltd., 302 Guarantee Bldg., pulp and paper mill engineers of Montreal, have designed and perfected this unique innovation which it would seem cannot fail to hold an interest for all paper manufacturers.

Among the advantages which the advertisement announces are the facts that this hood is especially adapted for replacement and can be installed without special shutdown. It is light in weight, practically indestructible, easily ventilated thus helping to realize ideal machine room conditions, guaranteed not to drip, low first cost and no maintenance cost, offers great saving in felts, and is endorsed by the underwriters. Further particulars may be secured direct from the H. S. Taylor Ltd., as named above.

C. I. R. BULLETINS ARE BEAUTIFUL.

Two more units in the series of bulletins on pulp and paper machinery manufactured by the Canadian Ingersoll-Rand Co., have been received. These bear the numbers P.M. 113 and 114 and refer to the Ryther improved parallel endless chain log haul and the 2 and 4 plate Bird auxiliary screens. Each of these types of equipment is found illustrated not only in detail as to the various parts but also a typical arrangement and a typical installation are very clearly illustrated and described. It is particularly gratifying to note that these bulletins, which exemplify the first type of printing are produced entirely in Canada by Canadian press work on Canadian coated paper. The printing is in three colors. Copies will be sent to the Superintendents and other responsible officials, on application to the company at their offices in Montreal or elsewhere across the continent.

NEW A. P. & P. A. EXECUTIVE MEETS.

The first meeting of the new executive committee of the American Paper and Pulp Association was held Wednesday May 18, and was featured by the enrollment of two additional associations as affiliated with the parent organization. The two associations which have been affiliated are the Gummed Paper Manufacturers Association and the Glassine and Greaseproof Paper Manufacturers Association.

Both associations are represented on the Executive committee of the American Paper and Pulp association by their presidents, L. T. Stevenson of the Mountain Mill Paper Company of Lee, Mass., representing the glassine and greaseproof association, and C. H. Cromwell of the Cromwell Corporation of Brooklyn representing the gummed paper group.

There was quite a general attendance of the members of the executive committee, and the problems of the coming year were discussed with a view to laying out definitely the work of the association for the year.

J. T. Carey, President of the International Brotherhood of Paper Makers, puts the number of men out in all branches of the paper making industry at 40,000. He says that no further conference between representatives of the unions and of the employers are in immediate prospect.

Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XVIX. GARDENVALE, P. Que., June 2nd, 1921. No. 22

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Official Journal of the Technical Section of the Canadian Pulp and Paper Association.

J. NEWELL STEPHENSON, M.S., Editor.

The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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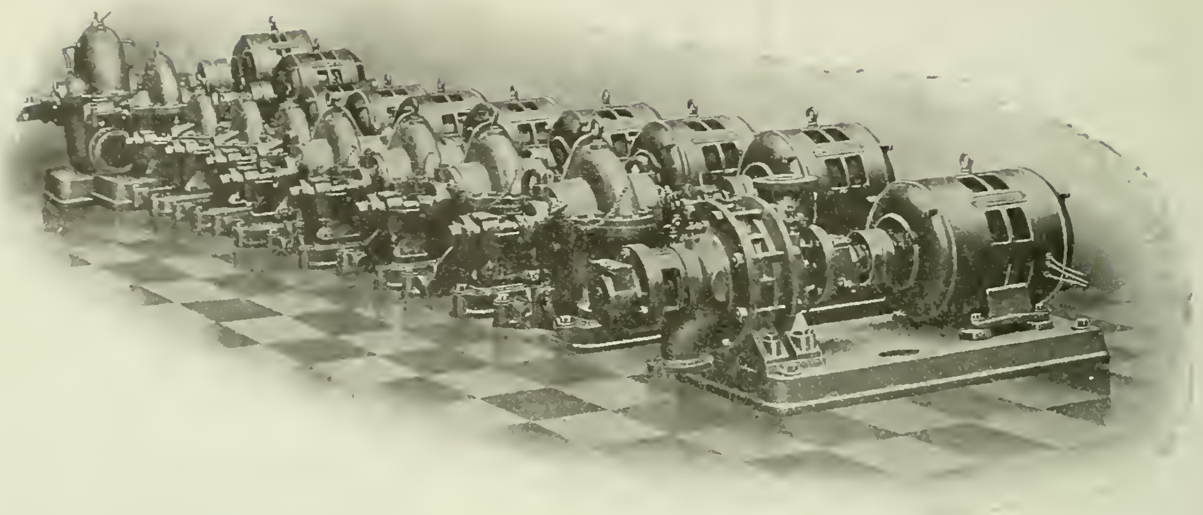

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Simplicity is their principal feature. When required they are easily dismantled. Few moving parts means longer life and freedom from repairs.

Allen pumps may be had for direct coupling or belt drive, reversible and non-reversible.

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EDITORIAL

CONSIDER THE CLOCK.

The thought occurred to us the other day, that industry is pretty much like a clock, it goes when every parts is performing its proper function, but will be difficult indeed to select any one part as being solely or completely representative of any particular section of the community. The only appropriate comparison at the present time, seems to be the suggestion that the so-called working class is represented by the striking mechanism, whereas a happier illustration, if it could be properly applied, would be to compare the worker with the train of gears which transmits and applies the source of power to the object desired. It might not be inappropriate to let the balance wheel represent the management.

Rather too much has been said of late along the line of comparing the industrial situation to the swinging pendulum. While it is true that in some styles of timepiece the application of the law of gravitation to the motion of a pendulum is made use of as a regulator, it is also true that a similar oscillating movement of industrial circumstances does not regulate but retards the progress of the industry. The pendulum of the clock is not a source of power and its function is equally well performed by a spring. The ever forward movement of the hands around the dial is accomplished by the application of power transmitted by the perfect mesh, and correct adjustment of the size, of the gears. The progress of industry is not dis-similar. Nature has furnished sources of power which may be the locked up energy of the sun in the ugly black lumps of coal or may be in the tons of glistening water seeking a lower level as they tumble over the ledges that obstruct the path of the river. The transmission of such power, or perhaps even the physical energy of men and animals for the production of some useful article of commerce from some otherwise useless raw material is the purpose of industry. This cannot be accomplished without co-operative effort in a complicated mechanism of the modern organisation of society. Every employer and every employee, every dollar of capital, every brick of construction and every wheel of equipment plays its part in the whole machine. If any part fails to accomplish its purpose, just like the breaking of a pinion or the clogging of a gear, then the clock stops. Let friction creep in, through any lack of "the oil of gladness" and cheerful and harmonious relations, through misunderstanding, misconception of purpose or individual or group selfishness and the mechanism slows down, just as the clock runs slow when dust gets in the bearings. We need to keep industry clean, we need to keep the bearings and every point of contact free from friction and obstructions. A clock can keep good time and mark the passing of eternity, without any strike, but the note of a clear tone bell, as each hour rolls round, does remind us that life is going on and is an urge to greater effort. So also in industry it is well to have some means of announcing and recording the progress of events as the clock of industry ticks off one accomplishment after another.

Organized effort, in almost every instance, makes greater progress and accomplishes larger results than individual effort. Even such necessarily individualistic endeavors as are marked by the marvellous inventions we have seen are usually of little use until organized work makes them available in practical form. There can be, however, organized effort other than with the idea of producing, or at least without the purpose of producing, material things. We have, for instance, political parties, we have safety organizations, we have public health bureaus, we have scientific associations, we have fraternal societies and social clubs, and, foremost in the line of social agencies, we have the church. We have also manufacturers' associations and workmens' unions. There will probably always be a difference of opinion as to the proper functions of such organizations.

It is not our intention to intervene in any way in the present controversy, but the fact must be obvious that the clock is stopped because the emphasis has been put on the swinging pendulum and the striking mechanism instead of on the necessity of keeping the rest of the works wound up and lubricated. Everybody knows that a clock cannot run if a single wheel stops, nor can any one element run the whole works. So in industry, the manufacturer or the merchant must work with his employees; they must work with him, and, unless he has been fortunate or frugal enough to have sufficient money of his own to carry on his business, he must borrow it from the banker, from the widow who has a life insurance, or from the workman who has savings, and these lenders must not only have confidence in the integrity of the manufacturer and merchant but they must also have faith in the loyalty and dependability of the employees of the concern. It stands to reason that such loyalty as will command the confidence of the public must be earned by the employer through his honorable and fair treatment of those who work for him—we should rather say, who work with him.

There are two sides to this matter of fair dealing just as there are two sides to most phonograph records. The employer must be willing to share his prosperity with his workmen and they must be ready to stand by him when times are dull. We hear talk of the unwillingness of workmen to share the losses, as they always desire to share the profits, of a proposition, but it seems to us there is another way out,—that is, to pay fair wages at all times and in times of prosperity to lay by an extra amount in reserve against dull periods rather than distribute the whole excess in extra dividends. A fair and satisfactory wage can be based on the average cost of living and, where necessary, fluctuate with it. We know that most workmen would prefer continuous employment to an occasional bonus and no doubt the average shareholder would prefer a regular, though smaller, dividend to an occasional melon, but periods of no dividends must be made up from profitable periods.

At the present time, it looks as if several Unions on the one side, and several mills on the other, were each endeavoring to pull the pendulum and hold it at opposite ends of the swing. A little thought will show that a clock cannot possibly run under such circumstances nor can industry progress. They should leave the pendulum alone and concentrate their efforts on keeping the works running. If a clock-maker finds one wheel a little too big he files a bit off. If the clock runs too fast he slows it down. The same principle can be applied to industrial relations. Industry can be slowed down and speeded up where necessary without stopping its progress,—that is the function of the pendulum or the balance wheel. A strike does not help a particle and the part that runs the strike never runs the clock.

There is just one other point to mention which is that in slowing down industry, as in slowing down a clock, it is absolutely impossible to slow one part and speed another,—all must move in harmony. So in industry if we are going to have progress instead of a continual swinging backward and forward, first the employer grabbing all he can hold, and then the employee holding all he can get, we shall not have progress but a continual source of trouble. The application of one single principle of Christian Doctrine which the great majority of both employers and employees profess to believe—and probably do believe—would, in practice quickly and easily remedy the situation. It would require, however, that both parties must truly be honest. We believe that the time is approaching when neither the Trades Union nor the employer will be in a position to dictate one to the other but that organizations of both will make easier the mutual consideration of common problems and so bind industry together that more perfect co-operation and understanding will obtain in industrial life.

THE SUMMER MEETING.

The summer meeting of the Technical Section of the Canadian Pulp and Paper Association will consist this year of an inspection trip to the mills of the St. Maurice Valley. It was the pleasure of the section to visit some of these mills several years ago as the guests of the St. Maurice Paper Co., The Belgo Canadian Pulp and Paper Co., and the Laurentide Co. Since that time a new mill in the district is that of the St. Maurice Lumber Co., at Three Rivers. A description of this mill will be published next week. Recently the company at Shawinigan Falls has changed its name and is now the Belgian Industrial Co. Not only has the name been changed but the plant has also been altered. At Grand'-Mere what is without doubt the finest paper machine room in the world has been put into operation by the Laurentide Co. These new things but add to the pleasure and profit of visiting both our old and our new friends.

A change in plans which we believe to be a good one is inaugurated with this trip. At the previous meetings of the Section to the St. Maurice Valley and in fact at all of the summer meetings of the Section the mills in the localities visited have gone to a great deal of expense with regard to the accommodation and entertainment of the Technical visitors. There is no question but that this courtesy has been thoroughly appreciated but we have often thought that the entertaining features provided by the companies could be carried too far and become such a strain, especially as each succeeding visit has been taken as an opportunity and a challenge to outdo the last, as to discourage invitations to visit mills which would otherwise be glad to open their doors to the Section. What we have said of Canadian mills is equally true of the American mills that have entertained the Technical Association. Both organizations are growing and each visit means a larger party than before. The pleasure of visiting pulp and paper mills and the courtesy always shown by the companies is incentive enough to attract every live member of the Technical Section without the necessity of giving what practically amounts to a bonus to attend the meeting. We congratulate the Executive Committee for deciding that the trip this year will be a "Dutch treat". The expense will not be heavy and everyone who can possibly get away for the three day visit to one of the most important paper making centres of Canada should certainly be on hand at the Windsor Station on June 14th.—Advise the Secretary NOW.

COBWEBS.

Last week we had the pleasure of a visit from Mr. William Adamson and Mr. Harry Kay, of Charles Walmsley & Co. Mr. Kay has already spent some time in Canada. Mr. Adamson seemed impressed with the prospects of the industry in Canada and finds conditions here much better than in England. He is of the opinion that the 3-roll width will be the future standard for news machines It was rather amusing, when a small creature buzzed by, to be asked if that was a mosquito. Mr. Adamson went on to New York where the pests are said to attain enormous size and viciousness. He'll find out what they are!

It is expected that Mr. Percy B. Wilson, President of the Canadian Pulp and Paper Association, will honor the Technical Section by attending the summer meeting this year.

Automatic Speed Control for Sectional Paper Machine Drive

By STEPHEN A. STAEGE, General Engineer, Westinghouse Electric & Mfg. Company.

Paper is made from a pulp stock, consisting of cellulose fibers carried in suspension in water. It is transformed from this liquid mass into a smooth sheet of paper in one continuous operation on the "paper machine," which is the largest and most complex of the various pieces of apparatus used in the manufacture of paper from raw material.

The paper is formed on a wire screen upon which the pulp solution is evenly deposited. Part of the water gravitates through the wire screen, part is drawn through the screen by vacuum suction boxes and still more is removed by the passage of the semi-formed sheet between large press rolls. Finally, after about a third of the water has been removed in this manner, the paper sheet, now thoroughly fabricated, passes on to large revolving cylinders heated by steam, where nearly all of the remaining moisture is evaporated. From the drying cylinders, the sheet passes to the calender stack where it is ironed out to a glossy hard smoothness by its passage between numerous highly polished steel rolls, stacked one above the other, around each of which the paper is threaded. After leaving the calender the paper is wound into a large roll on a reel. It is later trimmed to the desired width and rewound into new rolls of the dimensions required for the ultimate user.

Paper machines are divided into two principal types, known as Fourdrinier machines and cylinder machines. The Fourdrinier machines are used chiefly for the lighter weights and thicknesses of paper, such as news print paper, book paper, etc., and usually operate at relatively high speed, whereas the cylinder machines are used for very light or very heavy papers, such as tissues, card boards, container boards, box boards, etc. In the Fourdrinier machine, the sheet is formed on a wide wire screen operating like a belt around two rolls, and driven by one of them called the couch roll, the pulp stock solution being deposited evenly upon the surface of this wire screen. In the case of the cylinder machine, the liquid pulp stock is deposited upon the surface of a revolving screen drum or in many cases upon a number of these revolving screens known as cylinder moulds, each of which adds a thin layer of pulp stock to a revolving felt, making a sheet of any desired thickness. The fundamental difference between the Fourdrinier machine and the cylinder machine is that, in the Fourdrinier machine, the sheet is formed upon the screen, called the Fourdrinier wire, whereas in the cylinder machine the sheet is formed on the cylinder moulds. The presses, dryers and calenders are similar in both machines. On account of the higher speeds at which Fourdrinier machines operate, many variations in mechanical design are found in the two general types of machines.

When passing between the press rolls, the thin, wet sheet is slightly elongated and in its passage between presses it is acted upon to a certain extent by the atmosphere, causing evaporation and a tendency towards shrinkage. This is also true in the passage of the sheet from the last press to the dryer rolls and through the dryer rolls to the calenders. On this account, it is necessary that the paper machine be so constructed that each of its component parts or units, that is, each of its press rolls, trains of dryer rolls and stacks of calender rolls can be operated at a slightly different speed, in order to compensate for the variations in the elongation or shrinkage of the sheet that may take place from time to time, due to changes in atmospheric conditions or to variations in the consistency of the pulp stock as it is fed onto the machine.

From this brief description of the paper machine, it will be seen that each section must be susceptible to individual speed adjustment and control. Moreover, the correct relative speeds of each of the sections must be maintained with great precision, or the paper sheet will quickly be broken.

The speed at which paper machines operate also varies greatly. In cylinder machines, the linear speed of the paper may be only a few inches or feet per minute or it may be two or three hundred feet per minute. The machines will vary in width from those which can produce a sheet of paper 3 or 4 feet wide to those which can produce a sheet 10 or 15 feet wide. Sometimes a single machine may be required to operate over a great range of speeds, varying from perhaps 10 or 15 feet per minute to 200 feet per minute, so that whatever method of drive is used, it must be capable of operating over a considerable range of speeds. Fourdrinier paper machines seldom operate at speeds lower than 50 or 100 feet per minute. The upper limit of speed so far obtained is 1000 feet per minute. Many machines, however, are operating continuously at from 600 to 700 feet per minute.

The most common method of driving paper machines has been by means of an engine with cone pulley speed changes, a variable speed engine, or an adjustable-speed direct current motor. Each of the several sections is driven from a common line shaft by reduction gears, belts and pulleys or some type of rope drive, the belts being made to operate with pulleys slightly tapered or conical in form, so that by shifting the belt toward one end of the pulley or the other, the required adjustment of speed for each individual section can be obtained.

Since the variations in load on any individual section at a given speed are not great, seldom exceeding 20 or 25 per cent, the belt can be depended upon to transmit the load with a fairly constant slippage, and therefore relatively uniform speed. Following every change in load transmitted, there is, of course, a slight change in the amount of belt slippage on the pulleys, which necessarily affects to a certain extent the "draw" of the sheet between the sections, caused by the difference in relative speeds between the sections which have taken place. It is well known that variations in belt slippage are also caused by changes in the humidity of the atmosphere, affecting both the tension of the belt and the co-efficient of friction between the two surfaces, or by water, oil or foreign matter of any kind reaching the surface of the belt or pulleys. On account of the liberal rating of the belts which are commonly used, the degree of variation of belt slippage has not been sufficient to interfere seriously with operations, although it does frequently cause breakages of the paper sheet as it passes from one section of the machine to another, and more often causes undue straining of the sheet so that, while it does not actually break on the paper machine, it may break later while passing through printing presses.

Heretofore, mechanical drive has been used almost exclusively for the various sections of the paper machine. The reason motors have not been used for driving the individual sections, was because no means had been found whereby their speeds could be controlled accurately enough to prevent breakage of the paper, most of the trials of sectional motor drive having resulted disastrously. From the fact that the relative speeds of the sections have to be adjusted from time to time, synchronous motors are out of the question, and induction motors, on account of their inherent regulation characteristics, are equally unsuitable. Direct-current motors, on the other hand, can be designed to operate over wide ranges of speed, and offer great flexibility of control, and the only thing that has interfered with their general adoption has been the absence of a suitable type of speed regulator. Recent investigations have shown that, to prevent breakage or undue straining of the paper as it passes from one section to another, the variation of speeds between sections must be maintained, as an average value, within one-tenth of one percent. It is also necessary to raise or lower the speed of the entire paper machine by small amounts from time to time, without interfering in any way with the draw, or relative speeds of the various sections, and it is necessary, when changing from one grade of paper to another, to operate at widely different speeds; speed variations of 7 to 1, or even 10 to 1, frequently being encountered. Obviously, no standard regulating equipment heretofore on the market would meet these exacting requirements.

For many years, manufacturers and engineers have appreciated the great loss of power occasioned by the existing mechanical type of paper machine drives, the enormous amount of space required for the accommodation of the long line shafts, pulleys, belt drives, reduction gear units, friction clutches, etc., and the personal and fire hazard unavoidably associated with this type of transmission. Still more serious is the great loss of production resulting from the frequent paper breakages caused by excessive belt slippage and interruptions of operation for repairs to the various parts of the mechanical system, such as the friction clutches, belts and gear units.

These disadvantages can all be eliminated by the substitution of sectional individual motor drive, with a sufficiently sensitive scheme of controlling the motors, which would at the same time be sufficiently rugged to withstand severe and continuous operation in the hands of unskilled labor, and would be free from the necessity of adjustment or care by skilled electricians.

In response to the increasing demand for sectional motor drive, greatly accentuated by the desire to increase paper machine speeds, which are limited by the mechanical system of drive rather than the characteristics of the machine itself, a perfected type of sectional individual motor drive for paper machines with automatic regulation and control has recently been developed. This new system of sectional paper machine drive involves the development of a type of regulator not heretofore used, whereby the speed of the direct-current driving motors is maintained automatically within one-tenth of one percent; and the use of other standard control equipment for starting and stopping the motors. The regulator equipment itself does not include any delicate instruments or apparatus likely to

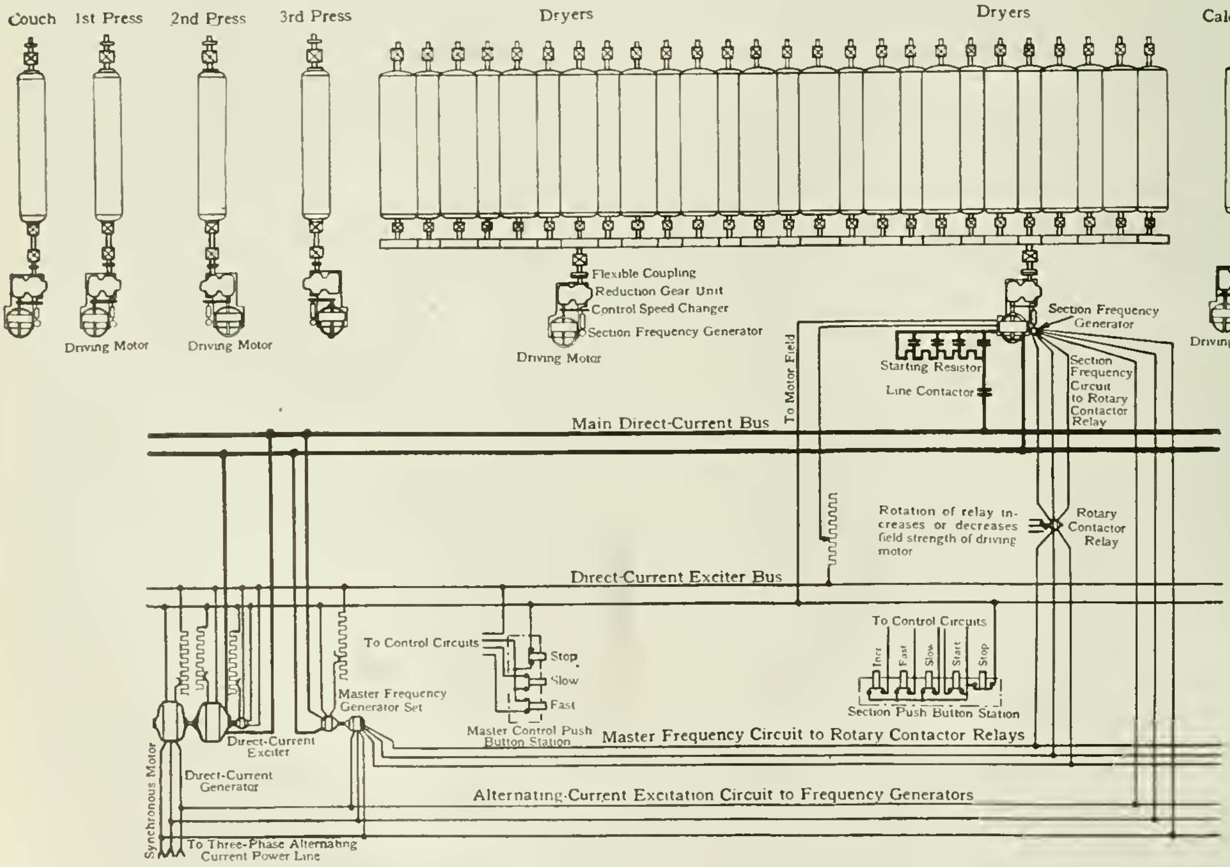

Couch
1st Press
2nd Press
3rd Press
Dryers
Dryers
Calender
Reel
Driving Motor
Driving Motor
Flexible Coupling
Reduction Gear Unit
Control Speed Changer
Section Frequency Generator
Driving Motor
Section Frequency Generator
Driving Motor
To Motor Field
Starting Resistor
Line Contactor
Section Frequency Circuit to Rotary Contactor Relay
Main Direct-Current Bus
Rotation of relay increases or decreases field strength of driving motor
Rotary Contactor Relay
Direct-Current Exciter Bus
To Control Circuits
Stop
Slow
Fast
Master Frequency Generator Set
Master Control Push Button Station
To Control Circuits
Incr
Fast
Slow
Start
Stop
Section Push Button Station
Master Frequency Circuit to Rotary Contactor Relays
Direct-Current Exciter
Direct-Current Generator
Synchronous Motor
Alternating-Current Excitation Circuit to Frequency Generators
To Three-Phase Alternating Current Power Line

Fig. 1.—Schematic Plan and Wiring Diagram of Westinghouse System of Sectional Individual Motor Drive.

get out of order, such as are usually associated with exceptionally sensitive regulating devices, but is fully as rugged and reliable in every respect as the most approved control apparatus used in industrial applications.

The complete system of sectional paper machine drive and control described in this article consists of an adjustable voltage, direct-current generator, of sufficient capacity to drive the entire paper machine, with direct-connected exciter; a direct-current adjustable speed motor for each section of the machine; suitable means for connecting the motor to each section of the paper machine driving shaft; and a control system which automatically maintains the correct speed of each individual motor; together with push button stations for starting, stopping and adjusting the speed of the paper machine as a whole.

The generator usually forms part of a standard synchronous motor-generator set or turbine-generator unit, and is a 250 volt, adjustable-voltage, separately-excited machine with a constant voltage 250 volt exciter of sufficient capacity to furnish excitation for the synchronous motor field, the generator and motor fields, and for the control circuit of the regulator. The motors, are 250 volt, separately-excited machines, and may be of any desired speed, dependent upon the particular requirements of the paper machine involved. Where a comparatively small range of speed for the paper machine is desired, that is, not more than 3:1 or 4:1, this is accomplished by voltage control of the generator through a motor-operated field rheostat. Where very wide ranges of speed, such as 10:1 are required, both generator voltage control and motor field control are used, the same motor-operated face plate controller or rheostat serving to insert resistance in the shunt fields of the several motors uniformly, after the generator has been brought to full voltage.

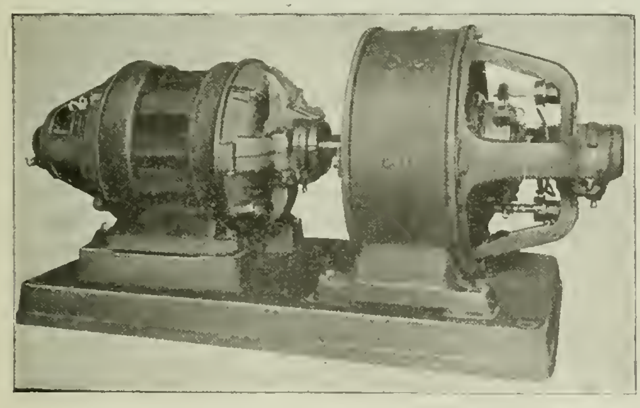


Fig. 2. — Master Frequency Generator Set.

The automatic control system consists of a small master frequency generator driven by a small direct-current motor operating in parallel with the section driving motors and separately excited; a small frequency generator driven from each of the section driving motors through a small speed changer consisting of two cone pulleys, to one of which the frequency generator is coupled; a powerful synchronous type of rotary relay for each driving motor, which serves to make an electrical contact in one direction or the other on the slightest unbalance of frequencies; and a motor-operated field rheostat, under control of the relay, in the shunt field circuit of each driving motor. The master frequency generator is common to all sections of the paper machine, whereas each section has its own section frequency generator, relay, and motor-operated field rheostat, together with an effective anti-hunting device.

The small frequency generators are all excited by alternating current, but since the master and section frequency generators are excited from the same source, any variations in frequency or voltage of the exciting source have no effect upon the regulation, as they do not disturb the balance of frequencies at the rotary relay. Since no appreciable amount of power is required to operate the rotary relay, these frequency generators are small in size. The small speed changers referred to are of small size, as they do not have to transmit power, but simply overcome bearing friction of the small frequency generator and the friction of their own ball bearings, which is practically negligible. By shifting the small belt on these speeds changers by means of a hand wheel, the relative speeds of the sections, or the draw of the paper, as it is called, is accurately and positively determined by the operator, and is thereafter maintained automatically at the correct value. Any unbalancing of the two frequencies at the rotary relay, caused by change in speed of the driving motor, immediately causes a positive synchronous movement of the relay, making an immediate contact and thereby adjusting the field strength of the motor, and returning the speed to the required value.

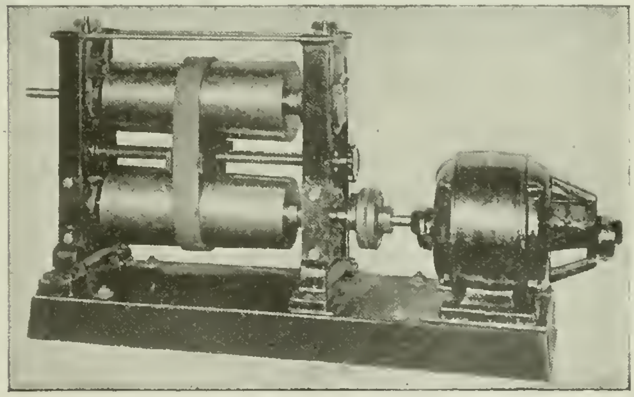


Fig. 3. — Speed Changer and Frequency Generator.

Before any governor or regulator can function, there must be a change of some kind, in either load or speed, as otherwise there would be no occasion for the regulator to correct anything. However, these changes in speed need not be large enough to be perceptible to the eye or detectable by ordinary indicating apparatus, to actuate this new regulator. In fact, the regulator will detect changes in speed of a few thousandths of one percent, and make the necessary correction immediately, and without any tendency to overtravel or hunt, so that no perceptible change will be found in the draw of any section.

A control board is provided in connection with each paper machine, having a master control panel for the paper machine as a whole, controlling the generator and master frequency generator; and a unit section control panel for each of the section driving motors. Starting equipment is provided on each of these panels, consisting of motor-operated cam accelerating switches with line contractors under the control of suitable push button stations for starting and stopping the individual motors, and the entire paper machine as a whole.

The master rheostat, under push button control, provides means for adjusting the speed of the paper machine as a unit, over the entire range of speed. The rotary contactor relay and motor-operated field rheostat for each section is also located on the unit section control panel. The push button stations, arranged conveniently on or near the apparatus, provide means for starting, stopping and obtaining any desired speed of the paper machine in the shortest time and in the most efficient possible manner. In this way and in the elimination of the cumbersome mechanical drive, a great deal has been accomplished in increasing production and improving overall efficiency and economy from every standpoint.

While the paper machine has been one of the last places in paper manufacture to derive the benefits of complete electrification, greater benefits will doubtless accrue from this advanced step in motor and control application than from any other phase of electrification in the paper industry.

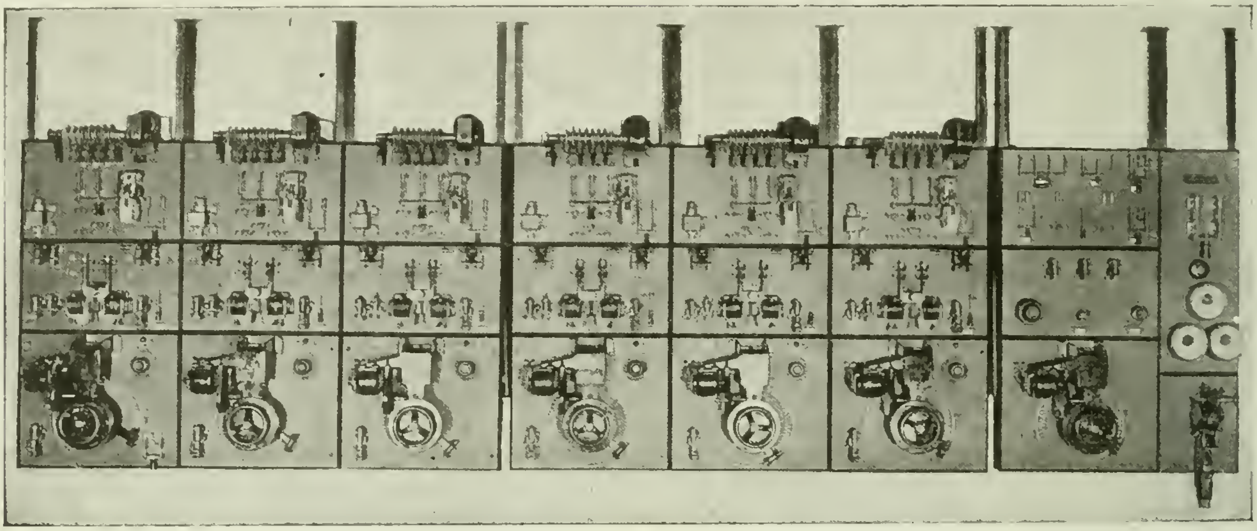


Fig. 4. — Control Board for Sectional Drive 166 Inch Fourdrinier Book Paper Machine.

THE MAKING OF NEWSPRINT PICTORIALLY EXPLAINED.

Some time ago the editor had a letter from Col. Haskell of the International Paper Co., saying that a book was on the way which he thought would prove interesting. The book has arrived and not only has it proved interesting, but it has proved so interesting to others around the office that the editor has hardly had a chance to look it over himself. The use of superlatives in describing a really beautiful object or article sometimes gives the impression of being insincere. We do not wish the following remarks to give such an impression. To say that we were delighted with this attractive indication of the courtesy and friendship of the International Paper Co., is putting it very mildly indeed.

The first thing to remark is the beautiful way in which the book is gotten up. The cover appears to be veneered with wood and the gold and black of the cover design set off most artistically the colored medallion showing a river and forest scene. The book is printed on heavy coated stock and the typography certainly does credit to the printer. The illustrations were drawn especially for this work and being reproduced in several colors most effectively set off the scenes incident to the harvesting of the wood and the colored sections photographs, and sketches of the machinery make much clearer the function of the different parts and the course of the materials.

We find that a brief history of paper making from the time of the Chinese down to the introduction of woodpulp in the mill of Warren Curtis and the formation of the International Paper Company. Next is a review of the woodlands controlled or owned by the Company and a map showing the location of the company's mills.

The listed water power developed and available aggregates 272,220, which is 25 per cent greater than power development of the Burton Law. It is interesting to note that the company requires 500,000 tons of coal in addition to the power developed in its hydroelectric plants.

The story of newsprint begins with the harvesting of pulp wood and here we see the typical logging operations under way. Then comes the preparation of the wood with pictures again showing each step and explained by a note which clearly conveys the meaning. The process of making mechanical pulp is told almost entirely by pictures which are almost as good as a trip through a mill. The artist has even succeeded in giving the impression of motion in the treatment of the photograph of the chipper. Diagrams show the meaning of each step in the manufacture of chemical pulp and a four page diagram shows the newsprint machine with the paper passing over it. Similar pictures then take up the important individual sections of the machine so that the function of each can be more clearly illustrated and explained. At the end is a short description of the organization with pictures of the officials. Having thus briefly described what is one of the finest examples of this kind of work we have seen, we wish to congratulate the company on the manner in which this subject has been treated.

The Technical Section expects the pleasure of seeing Mr. George E. Williamson, President of the Technical Association of the Pulp and Paper Industry; Mr. R. S. Kellogg, secretary of the Newsprint Service Bureau and other noted Americans on the trip up the St. Maurice Valley (and back).

Newsprint Production 11 p.c. less

The figures which follow show the results of the Federal Trade Commission's tabulations for April:

	Stock on hand 1st of month Net tons	Production Net tons	Stock on hand end of month Net tons
Total Newsprint :			
April, 1921	47,789	115,408	35,106
Total (4 mos.) 1921 ..	24,763	449,810	35,106
Standard News :			
April, 1921	35,517	105,855	29,580
Total (4 mos.) 1921 ..	19,573	412,632	29,580

Note:— Above figures for total newsprint do not include hanging paper.

The average production of total newsprint and standard news based upon the total combined production for the years 1918, 1919, and 1920, amounted to 117,442 tons of total newsprint and 105,716 tons of standard news, for a period corresponding to April. The actual production amounted to 115,408 tons of total newsprint and 105,855 tons of standard news, which for total newsprint was 2 per cent below the average for the three-year period and for standard news about the average.

The production of newsprint for April, 1921, compared with April, 1920, shows a decrease, amounting to 10 per cent for total newsprint and about 11 per cent for standard news.

The production for April, 1921, compared with April, 1919, shows a decrease of 1 per cent for total newsprint and a decrease of 1 per cent for standard news.

The increase of production for April, 1921, over April, 1918, amounted to 4 per cent for total newsprint and 4 per cent for standard news.

Mill stocks of both total newsprint and standard news decreased during April, 1921.

Loss of Production.

The following tabulation shows idle machine time reported to the Commission for the month of April, 1921:

Reasons	Number of machines	Hours idle
Lack of orders	16	4,218
Repairs	12	1,991
Other reasons	9	1,348*

* Includes 576 hours due to strike.

Imports and Exports.

The imports and exports of printing paper not dutiable (practicaly all newsprint) and of woodpulp for the month of March, 1921, compared with the month of March, 1920, were as follows:

	March 1921	March 1920
Imports of Newsprint (total)	66,790	55,132
From Canada	50,801	52,683
From Germany	3,740	.....
From Sweden	5,600	1,879
From Finland	5,358	.....
From Norway	1,229	570
From other countries	62	0
Imports of Ground Wood Pulp (tot.)	2,684	9,642
Imports of Chemical Wood Pulp (tot.)	21,225	53,870
Unbleached Sulphite	9,555	27,934
Bleached Sulphite	6,259	7,762
Unbleached Sulphate	5,384	16,804
Bleached Sulphate	27	1,370
Exports of Domestic Wood Pulp ..	2,496	3,868

The imports of newsprint for March, 1921, were 11,658 tons more than for March, 1920. The exports for March, 1921, were 2,581 tons less than for March, 1920.

The tonnage to "other countries" under "exports of Newsprint" for March, 1921, includes 30 tons to Canada, 30 tons to China and 21 tons to Columbia.

The imports of ground wood pulp for March, 1921, were 6,958 tons less than for March, 1920. The exports of domestic wood pulp were 1,372 tons less than for March, 1920.

Publishers and Jobbers' Tonnage.

Stocks of rolls in the hands of jobbers at the end of April were 424 tons more than the stocks in the hands of the same jobbers at the beginning of the month. Stocks of sheets were 711 tons less at the end of April than at the beginning of the month. The net decrease in the total stocks of newsprint in the hands of jobbers at the end of April amounted to 287 tons.

Commitments to sell roll news were 4,628 tons greater than commitments to buy. Commitments to sell sheet news were 885 tons less than commitments to buy. Total commitments to sell both rolls and sheets were 3,743 tons greater than commitments to buy.

Publishers' stocks increased 2,193 tons during the month. The average daily tonnage used during April was 366 tons more than the average used in March.

Eighty-two publishing concerns held about 76 per cent of the tonnage on hand at the end of the month.

Publishers' stocks and transit tonnage on April 30th represented slightly more than 53 days' supply at the existing rate of consumption.

The domestic consumption of standard news, by metropolitan dailies using between one-half and three-fourths of a million tons annually, for April, 1921, when compared with April, 1920, shows that the consumption for the month of April, 1921, was practically the same as for April, 1920, and increased slightly more than 11 per cent for April, 1921, over April, 1919.

Average Prices Paid by Publishers.

The weighted average price of contract deliveries from domestic mills to publishers during April, 1921, f.o.b. mills in carload lots for standard news in rolls was $5.409 per 100 pounds. This weighted average is based upon April deliveries of about 50,000 tons on contracts involving a total tonnage of approximately 650,000 tons of undelivered paper manufactured in the United States.

The weighted average contract prices based on deliveries from Canadian mills of about 30,600 tons of standard roll news in carload lots, f.o.b. mill in April, 1921, was $5.607 per 100 pounds. This weighted average is based upon the April deliveries on contract involving about 300,000 tons of undelivered Canadian paper.

The weighted average market price for April of standard roll news in carload lots f.o.b. mills based upon domestic purchases totaling about 2,500 tons was $5.206 per 100 pounds.

Forest fires benefit no one and they rob the workingman, the merchant, the farmer, and indirectly every citizen. Forest fires are fought not only in the bush, but in towns and cities. When Canadians of town and farm and forest are all determined to stop forest fires, then our forests will be freed from the ravages of this fiend.

Brompton's Diversified Output is Unique in Canada

By A. R. R. JONES.

The Brompton Pulp and Paper Company, Ltd., was incorporated by Dominion charter in 1916. It acquired the entire undertaking, properties and assets of the Brompton Pulp and Paper Company, incorporated by a special Act of the Quebec Legislature in 1912, and which, as a close corporation, was successfully carrying on the profitable business established several years previously.

The inception of the Brompton business took place in 1898 when Mr. E. W. Tobin, who lived at Bromptonville and was selling wood to the Odell Manufacturing Company, of Groveton, New Hampshire, asked his friends to build at Bromptonville and use the power there. This was the start of the Brompton business, with Mr. C. C. Wilson buying the timber. By 1901 the plant was completed, and pulp began to be made at Bromptonville.

In 1907, the Royal Paper Mills at East Angus, failed and were taken over by the Eastern Townships Bank. On the 1st of May in that year, the total holdings of the Royal Paper Company were bought, or absorbed by the Brompton Paper Company, and in the fall of 1907 the first sulphite pulp, from which kraft paper is made, was produced at East Angus by the Brompton Pulp and Paper Company.

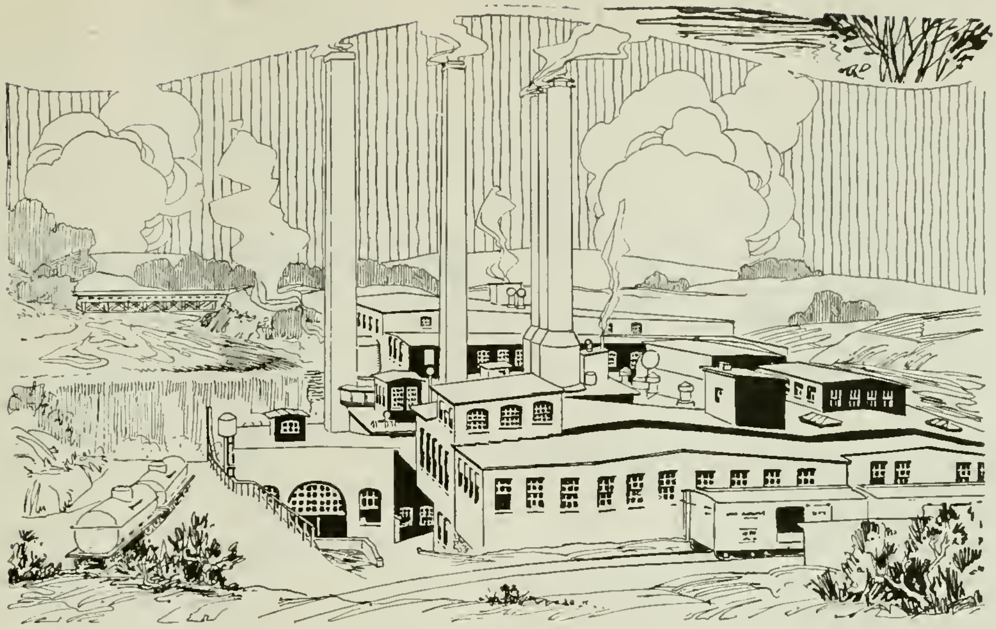
This company continued without much expansion until the 1st January, 1910, when Mr. J. A. Bothwell, the present general manager, bought an interest in the company. At that time the plants operated by the company were a groundwood plant at Bromptonville, the sulphate plant, with a capacity of 20 tons a day, and two paper machines, with a total capacity of 25 tons a day at East Angus. On the 4th May, 1910, the company started to expand by building a new groundwood mill, three quarters of a mile above East Angus. In 1911, the sulphate mill was rebuilt, and enlarged to a capacity of 90 tons a day. In the same year, a second groundwood mill was also built across the river, as well as a new wood room. In the following year, a box board machine was added, with a capacity of 30 tons a day, and, in 1913, the old wooden mill and beater room were pulled down and rebuilt of brick. In 1914 a news mill was built, and one machine, turning out 55 tons a day, installed. Two years later the present company was incorporated and acquired, as was said above, the entire undertaking, properties and assets of the former Brompton Pulp and Paper Company.

Since that date the record of the company has been one long story of improvements, extensions and expansions in all directions. The consistent policy of those who guidé its fortunes has been to increase its coming power by the investment in plant of surplus earnings, over and above reasonable dividend payments. Today the company's mill properties consist of (1) At Bromptonville, Que., about six miles from Sherbrooke, a large groundwood pulp mill, (2) At East Angus, Que., about fifteen miles from Sherbrooke, groundwood pulp mill, kraft pulp and newsprint paper mills, box board mills and a kraft paper mill. (3) Two saw-mills, one at Bromptonville, and one at East Angus. (4) At Groveton, New Hampshire, sulphate pulp and board and kraft paper mills. (5) At Claremont, New Hampshire, kraft paper mills. All the plants are conveniently situated, with adequate water and railroad facilities and well adapted for economical manufacturing and shipment.

Geographically, the mills of the subsidiary companies are so situated as to result in economy of operation and marketing. With regard to these companies it should be mentioned that the Claremont concern, which was purchased on the 1st January, 1918, was the first to make kraft paper in the United States, and by reason of its ownership of the Claremont mill property, the company is able to expand its business by shipping pulp from East Angus for the manufacture of kraft at Claremont for the New England market. Indeed, the Claremont property has proved a remarkably profitable and satisfactory asset. The same thing can be said of the mill property at Groveton, which was purchased from the Odell Manufacturing Company on the 1st January, 1919. Both the Claremont and the Groveton plants have been brought strictly up to date. By their acquisition the company has been made into a self-sufficient unit, with the market in its own hands for the greater part of its unfinished product.

In respect of the imported matter of timber limits, the company is in the fortunate position of owning in fee simple 280 square miles of Freehold Timber Lands and controls by lease from the Quebec Government 810 square miles of Crown Lands. The Groveton Company owns in the State of New Hampshire 65,000 acres of

Part of East Angus Mills, Quebec.

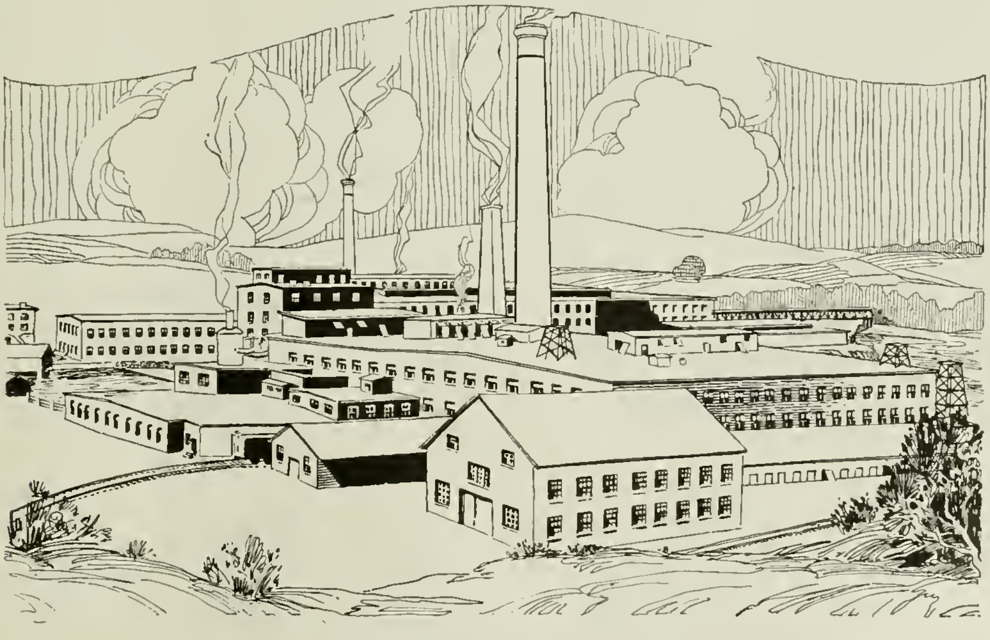


Claremont Mills, New Hampshire.

timber limits, pulp wood from which is accessible at low cost to the Groveton Mills. The limits are estimated to contain 7,000,000 cords of Pulpwood and a very large quantity saw logs and hardwoods, which are valuable in the manufacture of chemicals. The Standard Chemical Company, with plant at Weedon, near the company's holdings, is a large purchaser of hardwoods. The company controls practically all timber tributary to the St. Francis River above its mills. Wood from individual holdings is available for purchase on favorable terms. Without making allowance for wood purchased from sellers, it is estimated that wood reserves on the company's limits are sufficient for all future operations at present capacity.

As regards the company's water powers, these comprise two developments on the St. Francis River, at East Angus, having a combined maximum of 10,500 h.p., and a development at Bromptonville of 10,000 h.p. maximum, and developments at Claremont, N.H., and Bellows Falls, Vt., and Groveton, N.H., of 1,650 h.p. Two undeveloped water powers of an estimated capacity of 6,000 h.p. each are owned by the company, and are capable of reasonably cheap development. Storage dams have been installed by the Quebec Government for the purpose of stabilizing that amount of power.

The company manufactures groundwood, kraft and fibre papers, newsprint paper, box board and lumber, and it enjoys the distinction of having a more diversified output than any other large Canadian company. This varied output ensures both constant supplies of raw materials and also steadiness of earnings from the sale of finished products. The annual production, in tons, of the respective plants is as follows:



Groveton Mills, New Hampshire.

	Groundwood.	Sulphate.	Sulphite.	Newsprint.	Bond & Kraft.	Boxboard.	Gross Total.
Bromptonville	32,000	......	......	......	......	......	32,000
East Angus	40,000	27,000	......	34,000	9,000	15,000	125,000
Groveton	......	......	25,000	......	24,000	......	49,000
Claremont	......	......	......	......	21,000	......	21,000
Total Gross Output	72,000	27,000	25,000	34,000	54,000	15,000	227,000

The net tonnage for sale from this gross, after eliminating inter-company sales, is 123,000 tons.

The chief officers of the company, which employs in all some 3,000 workers, are as follows: Mr. F. N. McCrea, M.P., president; Mr. H. W. Beauclerk, vice-president; Mr. J. A. Bothwell, general manager; and Mr. W. N. Munroe, treasurer.

RUBBER AND THE PULP AND PAPER INDUSTRY.

By J. M. S. CARROLL, Sales Manager, Dominion Rubber System.

It can be truthfully said that without the successful co-operation of the Rubber Technologist, the Pulp and Paper industry would not have developed so rapidly as has been the case in recent years.

Owing to the extremely moist character of the interior of a pulp or paper mill, practical experience has determined that rubber is the ideal physical material used in conjunction with other suitable elements, for use in connection with many essential mill operations.

Rubber Covered Rolls have made possible the speeding up of newsprint machines to a point where daily production per machine has increased enormously. Some recent machines installed in Eastern Canadian mills are expected to ultimately reach the hitherto unheard of speed of 1000 feet per minute. In supplying the demand for thoroughly dependable rubber covered rolls for use in paper manufacture accurate densities relating to various types of rolls are assured by infallible mechanical methods.

Rubber belting has practically displaced all kinds of material previously used in pulp and paper mills relating to the transmission of power. Experience has demonstrated, definitely and finally to most mils, that good Rubber Belting is the ideal and most economical element to use on all power drives. It cannot be surpassed for dependable and satisfactory work under all conditions met with in pulp and paper mill operations.

Rubber Conveying Belts are an important factor in conveying chips, pulp, etc., and economical and dependable operation is invariably assured with their use if they are of high quality.

Deckle Straps require special accuracy and balance to operate successfully. Screen Diaphragms, Hose for mill operation and fire protective service, Packings, Valves, Rubber Boots, etc., are other rubber products regularly used in pulp and paper mills.

FIRE PREVENTION HINTS FOR SMOKERS.

Don't drop FIRE when you smoke in the woods, nor throw it out along the road. Keep the forests!

Matches, pipe coals, cigar stubs, and cigarette ends start many forest fires.

BE CAREFUL! Don't start a fire in the woods when you begin or end your smoke! Be sure your match, cigarette or pipe is out.

YOUR CO-OPERATION in order to keep down forest fires is asked. Break your match in two. Knock out your pipe ashes into your hand. Don't drop a burning cigarette.

FOREST FIRES cost millions a year; don't start one.

GENERAL DECLINE IN COMMODITIES ENDED.

Recent increases in the wholesale prices of certain commodities do not indicate a new period of rising values, in the opinion of Herbert P. Howell, Vice President of the National Bank of Commerce in New York. They do, however, show that the violent general decline in raw materials is definitely at an end. Many individual commodities will show considerable further revisions, he believes, but the general movement has reached a level at which manufacturers may do business on the basis of their own requirements irrespective of the market prices of unrelated commodities.

"Of the twenty-six representative commodities quoted monthly by the National Bank of Commerce in New York in its magazine, Commerce Monthly," Mr. Howell points out, "sixteen showed increases in May over the preceding month while four stood still and only six continued to decline.

"These increases must not be construed as indicating a new period of rising prices. Some of them are seasonal in character and others reflect a tendency toward stabilization on the part of commodities which in the general decline that began in the spring of 1920 may have fallen below a fair valuation. The increases are important, however, because they demonstrate that the process of liquidation has reached a point where raw materials are beginning to react to conditions in their own individual markets.

"Normally the price movement of every commodity is determined primarily by the status of its own market and that of commodities immediately related to it. Only in boom periods or during violent depressions are prices affected more by the general movement than by these individual factors. What has happened now is a return toward normal conditions. Henceforth, commodities may be expected to fluctuate in obedience to the influences of specific supply and demand.

"Many prices have stabilized. This does not mean that there will not be further declines. They may be expected in many lines, and commodities which have not yet been adjusted will receive no support from others that have reached a stable footing. In their decline, they will not force down commodities in which deflation has already occurred.

"While the violent general decline in raw materials and related products is over, this does not preclude a slow decline for a period of years. Such a decline would be no menace to sound business. It is perfectly possible in such a period to carry on sound manufacturing and merchandising operations with profit. Gradually falling prices over a period of years would not materially affect the price movement of commodities over such periods as are usually necessary for these operations. The present generation of American business men has been unduly alarmed by the downward tendencies of prices. Rising prices are not necessary to prosperity and a slow downward movement is discouraging only to reckless speculative activities."

Serious Situation in British Paper Industry

(From Our London Correspondent.)

London, May 17, 1920.—The situation in England at present is growing more serious every day. Everybody appears to be in a fighting or argumentative mood and combinations are setting themselves up against combinations with a view to achieving their own objects. On one side we have capital versus labour, and on the other the consumer, and importer versus the manufacturing interests—with daily and trade Press soothing syrup thrown in to relieve (or kill) heated views on the many sided heated subjects. As time goes on things seem to become worse. The British trade industry and the pulp trade have received a rude shock in many ways and the Imperial Government is still holding the Army Reservists and a special volunteer force to cope with the miners—or any others—if they "want trouble." People living in the United Kingdom today are in a most inglorious, discontented age, and it can only be put down to the Great War's reaction and the variations in the cost of living since 1914.

People today say: "You are optimistic"; "You are pessimistic";or "You're attitude is one of nonchalance to the industrial position." These are some of the traits in one's character and behind all the different elements at work fighting against industrial unrest and working out the ravages of decadent exchanges looms the manufacturer—bravely combatting for a simple existence in a free country where he can give employment and help make himself a valuable asset. We must face facts—and it is to be hoped Canadian manufacturers will never experience what their British confreres are going through just at the moment. A short survey of present conditions will suffice.

Newsprint Consumers Combine.

Readers of the British Trade news in the "Pulp and Paper Magazine" must first of all recall past writings on the variations in the rates of exchange in Europe and elsewhere, and on the movement to encourage trade within the Empire. Therefore, Canada does not come within the category of foreign imports into the United Kingdom and the Dominion's position in England today is something similar to that of the British manufacturer, viz., competing against cheap imported goods owing to unfair rates of exchange and sweated labor. The present position in the British market is attributable to the reaction of the Great War, and very naturally mill owners, who employ thousands of workers,—and who pay heavy taxation to the Imperial Exchequer—began to consider their position in relation to importers of paper and foreign exporters in a market where British manufactures were being sold. It was found there was underselling, due to rates of exchange. The Anti-Dumping Bill was then introduced in Parliament to save several industries, and knowing their industry was in grave danger some paper manufacturers appealed for a clause in the Bill to save paper. Newsprint consumers protested because they could buy the foreign product at a much lower rate than the British—although the British mills were selling several points below cost price. Unfortunately the discussions that followed in the newspapers and in the trade journals were tainted with old prejudices. The appeal to be included in the Anti-Dumping Bill drew forth the arguments of the "Free Trader" and in reply to him the "Protectionists" exploited their views. Personalities followed, one section of the Press backed up the "Free Traders," another wobbled on the fence, and another stood out for the "Protectionists." The "fight" is still in progress. The Anti-Dumping Bill has been partly considered by the House of Commons, and the consumers of newsprint have banded themselves together to prevent the British paper maker getting any protection by the Parliamentary measure which aims at putting 33 1-3 p.c. duty on all paper imported from foreign sources where there is a debased exchange in existence. But paper is not yet in the Parliamentary Bill and never was. It was only suggested that it should be included and the suggestion has developed into a clashing of interests. But the fight is in progress to get it included, with the consumers objecting to the inclusion. A great majority of these consumers are depending on foreign supplies. They never think of such places as Canada; they simply think of Scandinavia and surrounding places, and the Scandinavians are now telling them to get busy with their spokesmen in Parliament and save the consumer. How would Canadians like to produce newsprint and sell it in New York for less than 5 cents a lb.? Foreigners are producing it in Europe and selling it at this rate, with 2½ p.c. for prompt payment, in England. No British mill could pay wages and taxation and sell at such a price. And it is against foreign competitors of this kind that the Canadian manufacturer is expected to compete in the British market.

Decline in Paper Exports and Imports.

The decline in the exports of British paper is another serious element telling against the British mill. The miner's strike is responsible in part and dull markets abroad in part. So serious has the situation developed that many mills are closed down, whilst others are on short time owing to the small supplies of coal allowed by the authorities. The result is that unemployment is on a large scale and the British mill owner is being beaten every day in his own market by the cheap foreign paper.

During April last, paper, wrappings, paper bags, cardboard, etc., etc., were exported to the extent of 111,828 cwts., compared with 64,440 cwts. for the corresponding month in 1920. From January to April the exports were 573,716 cwts., as against 601,893 cwts. in the period of 1920—a decline of 32 per cent being shown in April last.

The principal exports chronicled are printing papers (not coated) and writing papers, and the countries to which they are shipped are as follows:

Export of printings (four months): To France, 4,590 cwts.; U.S.A., 2,590 cwts.; other foreign countries, 52,840 cwts.; South Africa, 35,403 cwts.; India, 42,638 cwts.; Straits Settlements, 5,861 cwts; Ceylon, 5,660 cwts.; Australia, 120,205 cwts; New Zealand, 21,769 cwts.; Canada, 1,369 cwts.; other British Possessions, 15,799 cwts. These make a total of 308,724 cwts. (219,189 cwts. in 1920). Comparing April last with March last the figures respectively are 60,660 cwts. (f.o.b. per cwt. value £3, 14s. 10d.) and 50,920 cwts. f.o.b. per cwt. value £4 6s. 8d.)

Exports of writings (four months): To France, 591 cwts.; U.S.A., 232 cwts.; other Foreign countries, 10,-

560 cwts.; South Africa, 4,205 cwts.; India, 10,211 cwts.; Straits Settlements, 1,490 cwts.; Ceylon, 1,001 cwts.; Australia, 15,158 cwts.; New Zealand, 7,616 cwts.; Canada, 289 cwts.; other British Possessions, 3,996 cwts. These make a total of 55,349 cwts for the four months compared with 59,425 cwts in 1920.

In the reports of packing and wrapping papers, paper hangings, roofing paper, envelopes, and "other manufacturers" there were sharp declines of noticeable features.

Turning to the imports they reached 1,676,559 cwts. in the period January-April, compared with 3,611,848 cwts. for the corresponding months in 1920. The imports cover all paper and boards.

The imports of printing paper were (four months): From Sweden, 164,887 cwts.; Norway, 66,630 cwts.; Germany, 30,699 cwts.; Belgium, 27,152 cwts.; U.S.A., 3,458 cwts.; Canada, 5,193 cwts.; Newfoundland, nil; other countries, 272,990 cwts. The 30,699 cwts. received from Germany were valued at £78,944 and the 5,193 cwts. from Canada at £16,622. I quote these figures for comparison in prices.

Packing, wrapping and tissue papers were imported as follows (four months): From Finland, 45,092 cwts.: Sweden, 96,096 cwts.; Norway, 53,545 cwts.; Germany, 69,865 cwts.; Belgium, 24,429 cwts.; Canada, 7,359 cwts.;cwts.; other countries, 39,262 cwts. A total of 335,585 cwts.. as against 1,510,508 in the period January-April, 1920. It will be noticed that Canadian supplies show a big falling off, which is to be regretted.

Coated papers (four months) imports: From Germany, 5,497 cwts.; Belgium, 4,324 cwts.; France, 1,406 cwts.; U.S.A., 3,510 cwts.; other countries, 2,199 cwts. Coated paper imports show a material decline. The total supplies being only 16,933 cwts., as against 33,417 in 1920.

Oil Fuel.

These imports and exports do not make cheerful reading. One has only to look at the imports and consider the British mill owner. He is fighting them furiously, he is fightng high taxation in his own country and now he is up against the coal miner who is throttling the paper industry among others. Therefore, the British paper maker must be always on the look-out for something new and efficient to bring about economy in the mill. True, he has been slow in adopting electricity for driving power, but there are arguments for and against his action. Out of 500 mills only about 21 mills are driving machinery with electricity and the great majority of the remainder are not in a position to introduce it owing to the exigencies of the mill. But attention has now been given to oil fuel, in place of coal, and experiments are being made with it with a view to abolishing the worry and annoyance—and expence—attached to coal as a fuel. As things stand at the present the coal miner has simply paralyzed the industry of paper. The railroad men are aiding in that paralysis, and if something is not soon settled about the coal mines I am afraid there will be a "bust" up all round over the importing of foreign coal into the country. Consequently oil fuel is now the papermakers' salvation, and he is testing it in order to help him keep his head above water in these troublesome times.

Big Decline in Pulp Imports.

Foreign importers of pulp to the British market remind the paper industry that if a 33 1-3 per cent *ad valorem* duty is placed on imported paper prices of pulps may become more buoyant. The hint is an indirect one. If the Canadian resources had been studied more keenly in the United Kingdom and financed in the past with more freedom by British interests, there would not be any hints thrown out today by foreign interests as to what they would do in the way of retaliation. As things are at present the British mills get large supplies from Finland and Scandinavia and are dependent on them for chemical pulps.

Owing to the dullness of the paper trade and industrial unrest there is no market worth writing about for pulps. There is a great depression all round, but prices remain unchanged. So far as can be ascertained a ground wood (wet) can be bought from £8 to £8 5s. a ton (f.o.b., c.i.f., etc.) Bleached sulphite is £39 10s.—£40 a ton, and easy bleaching, £29 and £30. Newsprint sulphite is in the region of £25 a ton, and unbleached soda (No. 1) £29 10s., with kraft £1 extra.

The imports of woodpulp for April were only 22,886 tons, compared with 71,528 tons in April, 1920. The imports of groundwood (wet and dry) in April were 15,567 tons, against 20,574 tons in March, 23,399 tons in February and 28,850 tons in January. Chemical pulps were imported to the extent of 7,319 tons in April, 5,420 tons in March, 9,210 tons in February, and 18,350 tons in January.

Four months—January-April—supplies were as follows: Groundwood (wet), 87,170 tons (116,696 tons in 1920); Groundwood (dry), 1,084 tons, (12,201 tons in 1920); Bleached chemical (dry), 4,798 tons (11,253 tons in 1920); unbleached (dry), 34,607 tons (137,304 tons in 1920); chemical (wet), 889 tons (1,487 tons in 1920).

Groundwood was imported from the following places during the months January to April: From Sweden, 444 tons (9 tons in 1920); Norway, 79.212 tons (109,073 tons); Canada, 7,520 tons (490 tons); other countries, nil, (620 tons). Total 87,170 tons (116,696 tons in 1920).

Bleached chemical, dry, (four months): From Finland 1 ton (nil, in 1920); Sweden, 99 tons, (1,936 tons); Norway, 4,152 tons, (6,837 tons); Germany, 140 tons, (425 tons); Canada and other countries, 406 tons, (2,057 tons)—total 4,798 tons (11,255 tons in 1920).

Unbleached chemical, dry, (four months): From Finland, 2.008 (11,516 tons in 1920); Sweden, 20,226 tons (79,731 tons); Norway, 10,644 tons, (35,399 tons); Germany, 990 tons (456 tons); Canada and other places, 739 tons (10,202 tons). Total, 34,607 tons (137,304 tons in 1920).

The Irish Paper Mills.

The unsatisfactory conditions prevailing at present in Ireland compelled the Irish paper manufacturers to hold a conference in Dublin. Like Canada there is a strong movement to favor Irish goods and the paper makers thought they should enjoy a share of the trade. Unfortunately some of the newsprint mills are not running at present for want of orders and the Irish paper makers did not hesitate to point out that while their newsprint mills were closed down, thus causing unemployment, the Republican, Nationalist and Unionist newspaper proprietors had large stocks of imported paper on hand. Within recent years there has been a remarkable development in the Irish paper mills. In some cases new machinery has been installed, particularly for cardboard making, and it is regrettable that the present depression has stultified the mill-owners' objects.

UNITED STATES NOTES

The United States Forestry Bureau in Alaska is receiving bids for tracts in a sale of a timber area which is second only in extent to that figuring in the Admirality Island sale several years ago. The tracts advertised for sale are located on the east shore of the Behn canal, on Revillajigedo island between Traitor cover and Neets bay divide and Curlew point, about 32 miles north of Ketchikan. They cover 45,380 acres and the estimated total stand is 100,000,000 cubic feet. About 20 per cent of the timber is Sitka spruce, 66 per cent, hemlock and 14 per cent. western red cedar. Two years are allowed for beginning operations, after which 30 years are allowed in the contract for the removal of the timber. The purchaser must construct pulp mills at 25 ton capacity by October, 1924, and increase these to 50 tons capacity by October, 1926. A bond of $20,000 is required. Bids will be received until July 7.

Damage estimated at $25,000 was sustained in a fire which, according to recent reports, partly destroyed the plant of Buffalo Wastepaper Company, Wabash street, Buffalo, N.Y.

Reports that employees of the American Writing Paper Company might have to forego pay for their vacation periods this year have been emphatically denied by the company's officials.

Robert F. Keogh, H. B. Rike, J. H. Eckman, George Shingledecker and Clarence Williams, all experienced paper men, are named as incorporators of the Buyers' Paper Company, capital $35,000, in papers filed at Dayton, Ohio. The new firm has leased quarters in Dayton where it intends to operate, handling all brands of paper and twine.

The Senate resolution recommending the appointment of a commission to take up the pulpwood situation with Canada has not yet been reported out of committee. Senator O. W. Underwood, of Alabama, who introduced the resolution, does not expect a favorable report, but he declares that he intends to push for action on it at the present Congressional session.

The National Drug Label and Box Manufacturers Association have appointed a committee to collect data relative to imports of paper boxes of the smaller variety and the dumping of these articles in the United States to the detriment of the American made product. It is said that with the imitative skill and low labor costs, the Japanese find that it is not difficult to compete with this class of box trade in the United States. A brief summary of the situation has been filed with the Ways and Means Committee of the House of Representatives at Washington, and a full report of manufacturers' committee findings will be submitted with a view to consideration in tariff legislation now pending.

George W. Hoffner, one time amateur golf champion of Philadelphia, easily defeated Philip W. Simons of Springfield, Mass., a former Harvard star, in the final for the championship of the Paper Trade Golf Association at Philadelphia last Tursday.

Waste paper gathered in the big office buildings in New York City was at a premium a few months back and good prices were in order because of the competition of the mills to get it. This competition, according to a report by the trade waste and ash committee of the New York Building Managers and Owners' Association, has ceased and the waste paper market is completely demoralized, due to the fact that the mills are no longer calling for it. The building managers are thus facing the problem of higher cost for the removal of their waste paper, and unless relief comes through general business improvement, they may have to pay for the disposal of this material.

Forest fires which raged for the greater part of last week in Franklin and St. Lawrence Counties, New York, wreaking great damage and costing the lives of two persons, were checked Friday when rain came to the assistance of the hundreds of fire fighters who have been striving desperately to keep the blazes from spreading. The hamlet of Meno, near St. Regis Falls, was completely destroyed. The two deaths occured there and were due to the quick spread of flames driven before a high wind. Included in the sweep of the fire in the heart of some of the richest timber country in the North Adirondacks, was a 100-foot railroad trestle spanning the Madawaska River. One of the largest of the fires raged at Cranberry Lake, where a tract of 150 acres has been burned over. At St. Regis Falls, while the fire was blazing most fiercely, the heat was so intense that a log jam in the St. Regis River burned to the water's edge.

Fires have also been raging in the Wales branch of the Minnesota State forest reserve. The blaze, at last accounts, was not under control and it was reported spreading over the boundary into the national reserve. Camps Nos. 8 and 10 of the St. Croix Lumber Company have been burned.

Settlement of the strike of workers in many of the paper plants in the United States may be brought about this week by submission of the questions of wages and working conditions to arbitration. Jeremiah T. Carey, president of the International Brotherhood of Paper Makers is quoted as saying that a group of manufacturers had made a proposal to arbitrate the disputes which brought about the strike, and added that a conference is being arranged. The International Paper Company is not included in the group of manufacturers which is desirous of arbitration.

HOW FAST DO TREES GROW?

One of the things most necessary to know in regard to Canadian forests is how rapidly they grow again, when cut down or burned over. Most of the European countries have this knowledge in fairly complete form and are managing their forests accordingly, but European figures cannot be applied to Canadian forests. Each country must make up its own growth-tables. Information on this subject is being gathered in different parts of Canada. One of these scientific studies of the rate of tree-growth is being made by the Forestry Branch of the Department of the Interior at Petawawa, Ontario, in the heart of the Ottawa valley. Plots of different kinds of trees are set apart, and the rate of growth in these measured and recorded. The effect of thinning, trimming, and draining upon the growth is also studied, so that in a comparatively few years data will be available which will be of the greatest value in the management of Canadian forests and woodlands.

Technical Section

REVIEW OF RECENT LITERATURE.

A-3. Pulp or Fibrous Material for the Manufacture of Paper, Papier-mâché, etc. Br. patent No. 137,105, L. H. SKINNER, London, Dec. 30, 1918. **J. Soc. Chem. Ind.**, xxxix, 227A (March 31, 1920). Fibers of a silky nature are obtainable from the tree mallow plant or from the tree mallow grafted or budded on to the stalk of a Jerusalem artichoke or sunflower. The stems are collected in the late fall, preferably after frost: they are chopped, boiled with water for eight hours, and reduced to pulp in a beating engine.—A. P.-C.

A-3. Algerian Mallow. Paper Making, Jan. 1921, xl, 1, P. 28. An article by L. VIDAL describing Algerian mallow and its fibers. The useful portions of the plant can be separated in the field by means of a special retting process which is both simple and practical and requires but little water. A raw and impure tow amounting to 10 per cent of the dry weight is obtained. After carding and weaving it can be made into cordage and burlap while as a raw material for papermaking it could be used directly.—A. C.

A-3. Paper from Alfa Pulp. World's Paper Trade Review, Jan. 7, 1921, xxv, 1, p. 6. Production of pulp from alfa is to be undertaken in France. This pulp will be dry so that transportation charges will be reduced and cost price less in proportion. Cellulose made from alfa is well adapted for the manufacture of smokeless powder.—A. C.

A-3. Raw Materials for Papermaking.—RAYMOND FOURNIER. **Papier,** xxiii, 248-9 (Nov. 1920). A plea for the utilization of the various straws and grasses, and more especially of reeds, which are so abundant in France, to free the French paper industry from its dependence on foreign sources of supplies, as it is impossible for it to supply its needs by wood from its own territory.—A. P.-C.

A-11. Colloidal Clay. Paper Maker's Monthly Journal. Jan. 15, 1921, lix, 9. A section on Clay and Clay Products is included in the third annual report of the Department of Scientific and Industrial Research on colloidal chemistry and its general and industrial applications, dealing with the plasticity and binding qualities of clays.—A. C.

A-11. The True Nature of China Clay. China Clay Review, Dec. 1920, xi, 19, p. 630. The conclusion of a series of articles by ALFRED B. SCARLE. China clay consists of extremely minute particles, chiefly a compound of aluminum, silicon, hydrogen and oxygen united in a manner as yet not fully understood. The precise chemical nature of these particles is of lesser importance than their physical properties, the chief of which are their very small size, the colloidal nature of their surface and their resistance to heat. These properties are allied with many others.—A. C.

B-0. The Training of a Forester. Dr. C. D. HOWE. **Can. For. J.** July, 1920. Page 334.—C. L.

B-2. Tree Fencing to Block Snow and Sand. B. M. WINEGAR, **Can. For. J.** April, 1920, Page 147. Work of the Canadian Pacific Railway in substituting planted tree fences for portable board fences, to prevent the blocking of the track by drifting snow and sand. —C. L.

B-2. Profits of Tree Planting in France. B. E. FERNOW, **Can For. J.** April, 1920, Page 153. Describes reforestation of sand dunes in four regions of France. This work was begun systematically in 1786 and has been remarkably successful, not only in restoring these waste areas to productivity but also from the financial viewpoint.—C. L.

B-2. Ontario's Tree Incubating Plant. Can. For. J. May, 1920, Page 241. Describes the nursery and planting work of the Ontario Forestry Branch.—C. L.

B-2. Replanting France's Ruined Forests. Can For. J. June, 1920, Page 273, C. L.

B-2. Reforestation and Pulp Companies. R. W. LYONS, **Can. For. J.** July, 1920, Page 341. Describes nursery and planting work of the Laurentide Company —C. L.

B-2. Reclamation of Pennsylvania's Desert. GIFFORD PINCHOT, **Can. For. J.** July, 1920. Page 347. Forest planting work by the State of Pennsylvania. —C. L.

B-2. New Forests for Nova Scotia's Barrens. FREEMAN TUPPER, **Can. For. Mag.** October, 1920. Page 469.

B-3. A New Reference Map for Aerial Purposes. By STUART GRAHAM, **Can. For. J.** Page 186.—C. L.

B-3. Price Brothers Aerial System. Can For. J. July, 1920. Page 337, Describes the work of this company in connection with aircraft.—C. L.

B-3. Can Timberlands be Fire Insured? W. R. BROWN, **Can. For. J.** July, 1920, Page 362.—C. L.

B-3. Air Maps for Flying Patrols. Can. For. Mag. Aug.-Sept., 1920. Page 406.—C. L.

B-3. Developments in Fire-Fighting Equipment. G. GERALD BLYTH. **Can. For. Mag.** October, 1920, Page 465.

B-4. How Paper is Made. J. N. STEPHENSON, **Can. For. J.** April, 1920, Page 157. Describes briefly the process of manufacture of Canada's most important manufactured product.—C.L.

B-5. Use of Aircraft in Forestry and Logging. ELLWOOD WILSON, **Can. For. Mag.** October, 1920, Page 439.—C. L.

B-7. Canada's Job in Handling Forests. Dr. C. D. HOWE, **Can. For. J.** April, 1920, Page 169. A brief review of the forestry situation in Canada and of the urgent need for adequate protection and management of our forests.—C. L.

B-7. Quebec Plans for Systematic Cut. G. C. PICHE. **Can. For. J.** April, 1920. Page 192.—C. L.

B-7. Can Canada Achieve Europe's Profits? Can. For. J. May, 1920, Page 233, Discusses Canada's forest areas and possibilities of large revenue from forest protection and management.—C. L.

B-7. Has the Hour Arrived for Constructive Forestry? ELLWOOD WILSON, **Can. For. J.** June, 1920, Page 267. Discusses the proposed policy of the Quebec Government looking toward the management of Crown forests on a sustained yield basis.—C. L.

B-7. Abitibi Company's Forestry Work Forges Ahead. Can. For. J. June, 1920, Page 293. Describes forest survey, forest nursery and forest research work of the Abitibi Power and Paper Company.—C. L.

B-9. The Forestry Situation in the U. S. Colonel W. B. GREELEY, Chief Forester, **Can. For. Mag.**, Aug. Sept., 1920, Page 410. Advocates the growing of more timber rather the use of less timber.—C. L.

E-2. Treatment of Sulphite Waste Liquor. U. S. patent No. 1,298,477, V. DREWSEN, assignor to West Virginia Pulp & Paper Company, U.S.A. **Chimie & Industrie,** iv, 233 (Aug. 1920). The liquor is boiled under pressure with excess of alkali for a sufficient length of time to precipitate the lignin compounds. The remaining solution or organic salts is evaporated and distilled in the presence of strong alkalis.—A. P.-C.

E-2. Recovery of Sulphur Dioxide in Sulphite Cooking. U. S. patent No. 1,327,666, J. P. V. FAGAN and H. G. SPEAR (assignors to the Brown Company) and R. B. WOLF, Berlin, N.H., Jan. 13, 1920). **J. Soc. Chem. Ind.,** xxxix, 226A (March 31, 1920. During the last portion of the cooking operation the gases and vapors which are usually blown with the digester contents into the blowpit, are blown into a condenser from the top of the digester and the SO_2 recovered.—A. P.-C.

E-2. Acetone from Sulphite Waste Liquors. U. S. patent No. 1,298,476, V. DREWSEN, assignor to West Virginia Pulp & Paper Company, U.S.A., **Chimie & Industrie,** iv, 233. (Aug. 1920). Excess of NaOH is added and the mixture is heated for several hours under pressure. The lignin compounds thus produced are precipitated and separated from the liquor containing lactonic acids and other products of transformation. They are dried and distilled with steam to obtain acetone and higher homologues.—A. P.-C.

E-2. Coating Compound from Waste Sulphite Liquor. Fr. patent No. 494,695, J. WINGEN, Holland, June 6, 1919. **Chimie & Industrie,** iv, 228 (Aug. 1920). Sulphite Waste liquor is mixed with a solution of an acid sulphite to which is added coloring matter, clay, chalk, and silicates. Oils, fats, hydrocarbons, etc. may also be added. This mixture gives a very hard coating which can be applied as a single coat of sufficient thickness on all materials, even on tar, carbolineum, etc., and which possesses the elasticity and hardness of cellulose and can be used for oil painting or lacquering. For use as a finish, chalk, with or without clay is added to the prepared sulphite waste liquor. For use as a mastic, it is sufficient to add to the foregoing some chalk, a fat or an oil or some hydrocarbons, to prevent too rapid drying. The disagreeable odor is masked by the addition of amyl acetate. As the coating is hygroscopic it should be covered immediately with paint or varnish.—A. P.-C.

E-5. Manufacture of Pulp from Slightly Lignified Plants. Ger. patent No. 301,716, M. LUDERS, Magdeburg, Aug. 30, 1916. **J. Soc. Chem. Ind.,** xxxix, 226A (March 31, 1920). (See also **Pulp & Paper,** xviii, 301, March 19, 1920). Materials such as jute, manila, bullrush, typha, flax straw and flax waste, hemp straw and hemp waste, nettle straw, etc., are digested in a closed vessel under pressure with a weakly acid $MgSO_3$ solution which according to the degree of lignification of the material, may contain up to 90 per cent of its SO_2 in the combined state.—A. P.-C.

L-5. Preparation of Stable Viscose Solutions. Ger. **Dilute Acids.** Ger. patent No. 314,712, C. F. HILDEBRANDT, Hamburg, Dec. 22, 1917. **J. Soc. Chem. Ind., xxxix, 227A (March 31, 1920).** Moss of peat is digested with dilute acids at a temperature below 100° Cent. and under atmospheric pressure without subsequent treatment with alkaline liquors, and the process is arrested before saccharification commences. After washing, or partial or complete neutralization, the pulp obtained may be employed as fodder or for the production of paper, nitrocellulose, etc.—A. P.-C.

Preparation of Stable Viscose Solutions. Ger. patent No. 312,392, R. LINKMEYER, Barby, and H. HOYERMANN, Hanover, Nov. 17, 1917. **J. Soc. Chem. Ind.,** xxxix, 227A (March 31, 1920). Viscose solutions are treated with substances which contain amide, or imide groups or are capable of forming such groups.—A. P.-C.

F-2. Recovery of Resin-like Substances from Black Liquor. Ger. patent No. 314,418, C. S. FUCHS, Heppenheim, Feb. 14, 1918. **J. Soc. Chem. Ind.,** xxxix, 241A March 31, 1920). Lignic acids obtained by the alkaline treatment of vegetable materials are converted into resin-like substances by the action of oxidizing agents, e.g., chlorine. The products obtained by the action of halogens on the lignic acids derived from straw are readily soluble in acetone, amyl acetate, and "Propol" (Bayer) and form a hard tenacious, lustrous surface after evaporation of the solvent.—A. P.-C.

F-2; K-2. Sizing and Finishing Material from Straw Pulp Waste Liquor.—Ger. patent No. 315,536, Veredelungs-gesellschaft fur Nahrungs-und Futtermittel m.b.H., March 28, 1918. **Rev. Prod. Chim.** xxiii, 453 (Aug. 15, 1920)—The waste liquor from the treatment of straw by the soda process is neutralized and the resulting precipitate kept moist. The neutralization may be effected by inorganic or organic (formic, acetic) acids, carbon dioxide, by salts the acid radicle of which acts as neutralizing agent and the basic radicle of which precipitates in the liquor (Al formate, $CaCl_2$, $MgCl_2$).—A. P.-C.

G-5. Pulp Thickener. Fr. patent No. 504,661, JOSEPH DENOEL, Belgium, Oct. 8, 1919. Papeterie, xlii, 739-42 (Aug. 8, 1920). Description of the Denoël pulp thickener. (For description and discussion of the principle on which it operates see **Papeterie** xlii; 50-60 (Jan. 25, 1920); 98-107 (Feb. 10, 1920); 146-51 (Feb. 25, 1920); 194-203 (March 10, 1920); **Pulp & Paper,** xiii, 729 (July 8, 1920).—A. P.-C.

K-2. Production of Cleaning Material from the Waste of Paper Industry. Ger. patent No. 306,461, REIS und CO., Friedrichsfeld, Sept. 18, 1917. **J. Soc. Chem. Ind.,** xxxix, 227A (March 31, 1920). Addition to Ger. patent No. 303,302, **J. Soc. Chem. Ind.,** xxxix, 15A (Jan. 15, 1920). The alkali in the liquor is partly replaced by salt, and the treatment is effected in the cold; e. g., the waste is treated with a liquor containing 40 parts of NaOH to 60 parts of NaCl for 3 to 4 hours. —A. P.-C.

K-6. Papermaking from Waste Paper. U. S. patent No. 1,326,349, C. T. CROCKER, Fitchburg, ass. U.S. A., Dec. 30, 1919. **J. Soc. Chem. Ind.,** xxxix, 227A (March 31, 1920). A continuous stream of pieces of waste paper is subjected to the action of a hot alkaline solution by causing each oncoming piece of paper, as nearly separate as possible, to be submerged in and moved through the solution, to facilitate the exposure of its surfaces to the action of the solution for the purpose of removing or neutralizing the ink or other material fixed to the surface. The pieces of paper are then removed from the solution and freed from the major portion of the adherent liquid, exposed to the air to cool and treated in a washing machine.—A. P.-C.

K-6. Process for Esparto Pulp. Fr. patent No. 505,-001, EMILE ARNOULD, France (Seine-et-Marne), April 26, 1920. **Papier,** xxiii, 180 (Aug. 1920); **Pape-**

(Continued on page 596.)

PULP AND PAPER NEWS

It is with great regret that one takes note of the fact that the Canadian Senate has refused to pass the Research Institute Bill. This ill-advised action (as we consider it) on the part of the Senate seems to have been based on economical grounds. But, if so, then it is a glaring example of false economy—and not merely of false economy but, as it happens, of poor logic as well. For surely it is illogical in the extreme that, when millions upon millions of public money are being expended on the Government railways which show no prospect of becoming self-supporting, the Senate should refuse to sanction the expenditure of only $1,000,000 on a project necessary to the maintenance of the export business which is so vital to the industrial life of the country. And this at a moment when we need—and need profoundly—to concentrate on the costs of production in order to maintain our export markets. The Senate's attitude in this matter cannot fail to have an adverse effect on practically all the big industries of Canada, and particularly on the Pulp and Paper industry which it had been resolved to link up with the commencement of the Research Institute. The attitude in question, moreover, seems to betoken a very curious lack of understanding of the necessity of governmental cooperation with business, under present-day conditions. In a European country, the comparatively small assistance asked would have been given gladly, and almost as a matter of course, in the knowledge that eventually it would benefit the entire country. The Senate's action has been all the more disappointing as, in view of the fact that the Research Institute Bill was a Government measure, it had been confidently expected that it would pass the Senate—as it did the House of Commons—without adverse comment.

The United States prices on newsprint are in process of being announced as we go to press. The indications are that a considerable reduction will be effected.

His many friends will be glad to hear that, according to a letter received from him by the secretary to the Canadian Pulp and Paper Association, Mr. Edward Beck, in charge of publicity for that organization, has had a good voyage on his trip to Scandinavia, where he has, doubtless, arrived by now. Mr. Beck writes that he was able to take his meals with a regularity which those of us who do not relish the mighty ocean's sportive ways, cannot help but envy. His fellow passengers, he added, included Scandinavians, Russians, Germans, French, Japanese and one or two Americans. He and his son, who accompanies him, were the only Canadians on board.

The strike at the Jonquieres and Kenogami plants of Price Brothers, pulp and paper manufacturers, has been ended. It is reported the employees have the firm's offer of a 20 per cent cut in wages and the open shop.

Yesterday witnessed the beginning of the second month of the paper-makers' strike, and no settlement has been arrived at. The largest company, the International, it is reported, states that it will not reopen its mills except on the open shop basis, a basis ruling in the Province of Quebec. At the beginning of the strike, it was estimated that the manufacturers had about two months' supply on hand. One of those months has passed, although it may not mean that all the paper publishers are buying into that surplus, instead of using their storings. In any event one month has passed. The mills effected are the Abitibi, Spanish River, and Fort Francis in Canada, and the Union Bag and Paper Company, Hanna Paper, Minnesota and Ontario Paper, Cliff Paper, Pettibone Paper, International Paper and St. Regis Paper, in. These companies produce the largest percentage of paper produced in North America, and their mills are closed, the opening time being unknown at present. Then withdrawal from the production of newsprint cannot but be considered significant. It diminishes the supply of newsprint by that amount, and helps in the stabilization of the market.

The third annual convention of the National Lime Association will be held at the Hotel Commodore, New York, June 15-17. This is the nineteenth gathering of Lime Manufacturers, and the programme contains a number of fine topics for discussion. The subjects which seem most likely to interest pulp and paper makers are: Kiln Efficiency, by Richard K. Meade, who has studied the recovery of lime in soda mills; The Art of Lime Burning, by George B. Wood, of Rockland, Me.; Standardization — Government Research and Industrial Development, by Dr. S. W. Stratton, of the Bureau of Standards; all of which come on the 15th, and a Symposium on the Special Properties and Merits of Lump Lime, on the 16th.

Mr. Hampshire, of the J. C. Wilson Company, Montreal, was in Toronto a few days last week on business.

Mr. George Davidson, of the Howard Smith Paper Company's Toronto office has returned from a business trip through the Canadian west to the Pacific Coast.

The current issue of the Canada Gazette contains the announcement of a change in the name of the Beveridge Paper Company, Limited, to that of Beveridge Supply Company, Limited.

Found guilty of assaulting Mr. George Warwick, of Warwick Bros. and Rutter, manufacturing stationers, Toronto, Harry Charles, his chaffeur, was remanded for sentence by Judge Coatsworth in the County Court Sessions in Toronto. The evidence showed that Charles, who is a returned man and who was the only one of his battery to escape death in the war, was dismissed by Mr. Warwick for appearing at the garage in a drunken condition. The assault followed the dismissal.

B. J. Avery, forester in the employ of the Spanish River Pulp & Paper Mills Co., Ltd., told the Timber Commission in Toronto last week that when all the improvements contemplated in the three mills of the company were in they could use up 368,000 cords of wood.

In 1921 the company was cutting 324,000 cords, as against 240,000 cords in 1919, said the witness. With all improvements in and running full head the mills cut 368,000 cords.

Mr. I. H. Weldon, head of the Provincial Paper Mills, Limited, spent a few days in Ottawa last week attending a meeting of the Book and Writing Paper Section.

A business visitor to Toronto last week was Mr. Frank McAllister of the Parsons Trading Company, New York, paper merchants and exporters.

Mr. W. H. Sherriff, of the Hodge-Sherriff Paper Co., Ltd. Toronto, selling agents for the Wayamagamack kraft mill, returned to Toronto last week after a trip through the Canadian West to the Pacific Coast. He describes trade throughout the west as rather quiet with the same conditions prevailing there as in the east.

Mr. S. F. Duncan, secretary-treasurer of the Provincial Paper Mills Limited, Toronto, spent several days of last week at the company's mill in Port Arthur.

Mr. H. B. Donovan of the Canada Paper Company's office in Toronto visited the Montreal office of the firm last week for the first time since his recent illness. His many friends in the paper trade will be pleased to learn that Mr. Donovan s now pretty well restored to health.

The directors of the Red River Paper Co. of Winnipeg, have completed arrangements for the enlargement of the mill whereby U.M. Waite of the Reliance Mill & Trading Corporation, New York, takes over the management of the plant. Mr. Waite is well known in the pulp and paper line, being connected with several Canadian companies. John Ball, of the Reliance Mill & Trading Corporation, has been elected a director of the Red River Paper Mills and also John Brassington, chief engineer of the Port Arthur Shipbuilding Co., Port Arthur.

The Detroit Sulphite Pulp & Paper Co. has commenced shipping spruce pulpwood from Port Arthur to Detroit. The loads are being taken on at Nipigon Bay. Chas. W. Cox of Port Arthur, who has been in charge of the camps of the Detroit company all winter, says that he expects to export 20,000 cords of wood for the firm during the present summer.

The Canadian Forestry Exhibition car, which was sent out from Ottawa in the interests of education along the lines of forest preservation, has been visiting several points in New Brunswick, and much interest has been developed in the splendid revelation which the exhibit presents. Moving pictures are shown in connection with the demonstration for the benefit of school children.

CANADIAN PRODUCTION FOR APRIL.

According to the Bulletin of the Newsprint Service Bureau, the 16 Canadian mills reporting for April produced, in that month, 69,221 tons; a daily average of 2,662 tons. This is at 85.3 per cent of capacity. For the first four months, the average production rate was 84.7 per cent as compared with 101.6 per cent in the first four months of 1920. Mill stocks, April 30, were 21,632 tons as compared with 11,484 tons in 1920.

If you are going on the great trip to the St. Maurice Valley mills, tell the Secretary at once. If you are not going, tell him that.

EXPORT PAPER CO. CONCENTRATES ON NEWSPRINT.

This is the day of specialists. The Canadian Export Paper Co. was formed several years ago to bring under one organization the export sales of the newsprint production of several of the larger Canadian newsprint paper mills. This arrangement not only eliminated considerable friction but made it possible to place orders in the mill which could most economically manufacture the goods and could most expeditously fill the order. This combination of economy and service has been of value and a great factor in the success which has attended the operation of the company.

During the war it fell upon Canadian mills to supply some importers in foreign lands with papers that they could not get from their usual source and the Export Paper Company formed a Specialties Department under the direction of Mr. Norman E. Wainwright. Canadian book and writing papers and other products other than newsprint which were thus distributed have now become an especial factor in Canada's paper exports and have found favor in many countries. However, with the growing sense that Canada must continue to become a more and more important supplier of newsprint for the world's printing press the Canadian Export Paper Co., foresees the need of concentrating on the service for which it was originally formed. By an agreement with the mills, therefore, the company will resume its original function of handling only newsprint and the business of the Specialties Department will revert to the mills which had formerly supplied those papers.

Mr. Wainright has been appointed to take charge of the export business of the Howard Smith Paper Mills and has this week taken up his work with that organization. His first move will be to get a comprehensive view of the world situation and first hand information with regard to markets for the products of the company in foreign fields. For this purpose he will make a tour of the world and expects to sail the latter part of this month. Mr. Wainwright will also serve the Provincial Pulp and Paper Mills in the distribution overseas of the book papers made by that company, the arrangements having been consummated this week when Mr. Wainwright visited Mr. I. H. Weldon, head of the Provincial organization, in Toronto, for this purpose.

R. B. Morley who has been general manager and secretary-treasurer of the Ontario Safety League for seven years has been appointed secretary-treasurer of the Industrial Accident Prevention Association. This latter is an organization which was formed under the Workmen's Compensation Act, for the purpose of preventing accidents in industry in Ontario and offers a wide field for work.

Mr. Morley's knowledge of public safety work will not, however, be lost to the Safety League as he will be retained in an advisory capacity and so be in a not. The lost inches increase the cost of the paper dustrial and public safety in Ontario.

The Cycle of Trade; The one real example of perpetual motion

1 High prices produce a surplus of goods
2 Surplus of goods produce low prices
3 Low prices produce scarcity of goods
4 Scarcity of goods produces high prices.

—"National," January, 1921.

(Continued from page 593.)

terie, xlii, 790 (Sept. 10, 1920). See Fr. patent No. 118,376; **Papier**, xxii, 344-5 (Dec. 1919); **Rev. Univ. Papeterie**, iii, p. 9, (Jan. 15, 1920) **Paper**, Aug. 18, 1920; **Pulp and Paper**, xviii, 917-8 (Sept. 2, 1920).—A. P.-C.

K-10. Sizing Paper. Ger. patent No. 307,694, O. RUFF, Breslau, Jan. 19, 1918. **J. Soc. Chem. Ind.**, xxxix, 227A (March 31, 1920). The paper pulp is first made neutral or alkaline, then treated with an alkaline solution of condensation products of phenols and formaldehyde, and finally acidified. The finished paper is heated for about one hour at 120° Cent. in a drying chamber, or passed slowly over the rollers of a drying machine heated to 120° Cent. to 140° Cent.—A. P.-C.

K-10. Beater-sizing of Paper or Cardboard Stock. Ger. patent No. 303,828, Zellkoll, C.m.b.H., Germany. **Chimie & Industrie**, iv, 234 (Aug. 1920). The sizing is carried out with easily dissociated organic aluminum salts.—A. P.-C.

K-10. Sizing Paper and other Absorbent Material. Ger. patent No. 303,925, Holzverkohlungs-Industrie Akt. Ges., Germany. **Chimie & Industrie**, iv, 234 (Aug. 1920). The paper is treated with alkaline solutions or suspensions of condensations products of tarry aldehydes and the sizing agent is precipitated by the addition of an acid. — A. P.-C.

K-10. Sizing, Waterproofing, Finishing, etc., Paper. Ger. patent No. 305,525, W. SCHMIDT. and E. HENFER, Germany. **Chimie & Industrie**, iv, 234 (Aug. 1920). The pulp or fabric is treated with peat or coal tar, either in a very finely divided insoluble condition, or as a tar soap; and by the action of an acid, by double decomposition, or by formaldehyde, the tar is precipitated in an insoluble form on the fibers.—A. P.-C.

K-11. The Manufacture of Easily Folded Paper or Board. Ger. patent No. 314,641, J. M. VOITH, Heidenheim, July 25, 1918. **J. Soc. Chem. Ind., xxxix,** 227A (March 31, 1920). Webs of paper pulp on a flat or cylindrical machine, with an uninterrupted wire surface are combined at the wet press with webs made on a machine, the wire of which is partly covered.—A. P.-C.

K-11. Wooden Jackets for Paper Machine Press Rolls. Ger. patent No. 308,069, F. H. FULLNER. **Chimie & Industrie**, iv, 234, (Aug. 1920). The invention is characterized by the special shape of the metal core which has dovetail shaped grooves into which are fitted strips of wood; these are put in dry, and have a little play, but they swell up as soon as they are wetted and become very firmly fixed.—A. P.-C.

K-20. Process for Making Parchment Paper and Vulcanized Fiber. Eng. patent No. 124,979. The Manchester Oxide Company, England. **Chimie & Industrie**, iv, 233 (Aug. 1920). Same as U. S. patent No. 1,333,465, **Paper**, xxvi, 235, (1920).—A. P.-C.

K-23; L-7. Process for Improving Paper or Pulp Fabrics. Ger. patent No. 303,861, Exportingenieure fur Papier-und Zellstofftechnik G. m.b.H., Berlin-Wilmersdorf, Sept. 30, 1915. **J. Soc. Chem. Ind.**, xxxix, 185A (March 15, 1920). The fabric, preferably after treatment with a swelling agent, such as NaOH, ammoniacal copper solution, lactic acid, etc., is subjected to fulling, either dry or damp, in order to compress. Albumin may be used both as a swelling and finishing agent, added either after the fulling or after the drying; it is preferable to add to it small quantities of acids or alkalis to increase the swelling effect and the case of the penetration of the albumin into the fiber, and of a hydroscopic substance to reduce the hardness of the fabric. If the fabric is to be exposed to wet conditions a water-repellent substance such as wool-fat should be added.—A. P.-C.

K-23. Copying Paper. Australian patent No. 9,265, C. HARGRAVE, Australia. **Chimie & Industrie**, iv, 234 (Aug. 1920). The paper is immersed in a solution of tannin (extract of Eucalyptus gum) and of glycerin, to prevent drying. A soluble black is then added. The paper which is to receive the coating is plunged in a solution of iron sulphate containing 100 g. per liter.—A. P.-C.

K-23. Waterproof Paper. U. S. patent No. 1,345,476, A. L. CLAPP, July 6, 1920. **J. Soc. Chem. Ind.**, xxxix, 595A (Sept. 15, 1920). Fibrous paper pulp containing a soluble soap is treated with $Ca(OH)_2$ to precipitate the calcium soap, and aluminum resinate is then precipitated in the product.—A. P.-C.

L-4. Paper Containers. Paper Container, Feb. 1, 1921, iv, 2. The fourteenth article of a series describing the process of making cartons or folding boxes. A summary of the preceding articles is also given.—A. C.

L-5. Lowering the Hygroscopicity of Artificial Silk. Ger. patent No. 316,045, LOUIS FESSMANN, Nov. 26, 1918. **Rev. Prod. Chim.**, xxiii, 453 (Aug. 15, 1920). The fibers in thin layers, are heavily pressed between two rolls to make them denser and less hygroscopic.—A. P.-C.

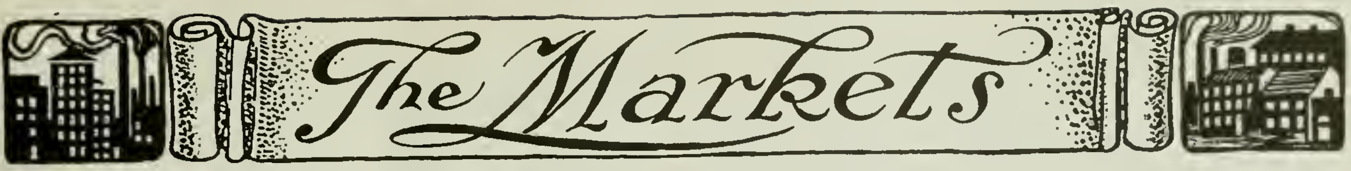
L-5. Artificial Silk for Textiles. Br. patent No. 116,103, Deutches Gasluhlicht A.-G. (Auerges.), May 22, 1918. **J. Soc. Chem. Ind.**, xxxix, 595A (Sept. 15, 1920). Artificial silk is permanently loaded by treatment with the by-products of thorium manufacture, which contain cerium, lanthanum and didymium in the form of a solution of 40 to 50° Bé. (sp. gr. 1.38-1.53), drying and treating with alkaline gases as NH_3 or CH_3NH_2. The fiber becomes swollen. The loaded material may be bleached with 2 to 3 per cent solution of Na hydrosulphite. Dyeing should precede the loading treatment.—A. P.-C.

L-5. Manufacture of Cellulose Acetates. U. S. patent No. 1,347,801, J. O. ZDANOWICH, London, England, July 27, 1920. **Chem. Met. Eng.**, xxiii, 540 (Sept. 15, 1920). Same as Br. patent No. 139,232. See **J. Soc. Chem. Ind.**, xxxix, 483A (July 15, 1920)—A. P.-C.

L7. Process for Impregnating Yarns and Fabrics of Paper. Ger. patent No. 303,926, O. RUFF, and P. PRAETORIUS, Breslau, March 21, 1917. **J. Soc. Chem. Ind**,. xxxix, 226A (March 31, 1920). Aqueous solutions of phenols with formaldehyde and alkali are heated together, but not long enough to permit the separation of insoluble products, and are then used for the impregnation of paper materials. By heating the latter further, insoluble condensation products are formed. To add to the strength of the fabric, a further treatment with formaldehyde may be used.—A. P.-C.

L-7. Impregnation of Paper Fabrics. Ger. patent No. 312,686, Deutsche Pyroxit Gesellschaft m. b. H., Germany. **Chimie & Industrie**. iv, 232 (Aug. 1920). The fabrics are impregnated with wood tar, either pure or diluted, and then sprinkled with zinc oxide.—A. P.-C.

L-0. Insulating Compound. Ger. patent No. 304,239, 304,240, "Lipsia" Chemische Fabrik, July 8, 1915. **Rev. Prod. Chim.**, xxiii, 453 (Aug. 15, 1920). By means of waste liquor from the potash industry fibrous material is coated with a deposit of $MgCO_3 3H_2O$ which on drying is converted to a basic carbonate, giving a light product of low thermal conductivity.—A. P.-C.



The Markets

CANADIAN TRADE CONDITIONS.

Toronto, May 28. — The past week has shown a fairly stable condition in the pulp and paper trade, which has caused some men in the business to wonder if prices had at last struck rock bottom. Certain it is that there have been signs of a returning confidence and stability in a number of lines and unlike most weeks of late, that just closed has witnessed no price reductions. There has also been some very nice business passing in some lines and although the depressed conditions have by no means been dissipated there is, perhaps, a brighter tone pervading the industry than for some months past. One contributing cause may be mentioned in the fact that as this letter is being written there appears to be a very good prospect of the negotiations between the employing printers and employees in Toronto resulting in a settlement of the dispute over the demanded 44-hour week and increased wages without recourse to a strike which is due on June 1st, if a compromise is not reached. Conferences have been held all this week between representatives of the Typothetae and the International Typographical Union and it is stated today that the chances of an avoidance of a strike are good. This should have the effect of further steadying the paper market. There is also a feeling of confidence that the striking employees in the newsprint mills will be back at work within the next two weeks. The Canadian mills affected, notably Spanish River, Abitibi and Price Bros. have been closed down about two weeks now and amongst the Toronto papers at least there has been no shortage of newsprint. These Toronto newspapers offices depending upon the striking plants for their newsprint supplies have stocks on hand sufficient for some time yet. If they run short arrangements have been made for supplies from non-striking mills so there does not appear to be any prospect of a serious shortage during the duration of the trouble.

PULP.—According to the Toronto representative of one of the big pulp mills the pulp situation is brightening up somewhat and conditions generally with respect to raw stock are showing some signs of improvement. It is stated that stocks in the hands of the mills and the jobbers are gradually being reduced, although it is conceded that the threatened strike among the printers is having a deterent effect on the turnover and sale of pulp throughout Canada. Several of the mills report that the month of May has shown a considerable loosening up in pulp shipments and one mill stated that the sales during the present month have exceeded any month since January last. No. 1 bleached sulphite is quoted at 6½ cents; easy bleaching, 4 cents; new grade sulphite $70 a ton and groundwood from $30 to $40, although sales of the latter are said to have been made at slightly below these figures. Generally speaking there is no fixed market price for any of the lines and deals are being made without respect to any standard price values.

PULPWOOD.—High prices were paid during the winter for pulpwood in the Port Arthur district, from $12 to $16 a cord being the ruling quotations, while ties are being contracted for at 95 cents a piece, which is the highest price ever received for this class of wood. There will be a cut of about 166,000 cords of pulpwood, 500,000 ties and about 750,000 feet of lumber. The market for pulpwood throughout Canada remains unsettled and according to Toronto contractors there is no set price for any of the product.

BOOK PAPER.—The book paper market continues to be in a very unsettled condition and the same applies to bonds and ledgers. While it is stated in some quarters that the bottom of the market has not yet been reached, a Toronto representative of one of the big Canadian mills stated that he believed that there would be no further reductions for some time—if at all, although, he said, things were in such shape that a drop might come any time. There is no fixed price for any line of book paper. There are very few buyers amongst the jobbers and consumers are apparently using little, for the turnover is the smallest it has been for months. The mills are getting no big orders and the runs are small. A hand-to-mouth consumption about describes the situation, a condition which the threatened strike of printers is only partially responsible for. Certain it is that no wholesaler, retailer or printer it taking any chances on stocking up these days when they do not know how far the market is going to drop nor what the possibilities for future demand and consumption are likely to be. As far as can be learned no improvement in trade has been noticed although those mills which are supplying publishing houses with paper have some good contracts and in some cases are running full.

WRAPPING PAPER.—There have been no changes in the prices of wrapping papers for several weeks. The market appears to have steadied down somewhat but the demand is still off and manufacturers and jobbers are complaining of small business. The mills are still keen after sales but the jobbers are loth to stock up and there is comparatively little stock on hand with any of the dealers. Jobbers report that the holiday had a rather up-setting effect on business but anticipate that the close of the month will prove a fairly satisfactory volume of business to have been done during May.

GREASEPROOF AND GLASSINE.—With several of the Canadian mills closed down there is very little business doing in these lines of paper, although one mill reports some enquiry from abroad for Canadian lines which may develope into business later on. Just now, however, the export demand is practically nil and there is very little domestic demand. The Lincoln Paper Mills at Thorold, which are large manufacturers of glassine and greaseproof, have been closed down for some time, but hope to reopen shortly. There have been no changes recently in the prices of the two lines of paper mentioned.

TOILETS AND TISSUES.—Toilet papers are now practically down to pre-war prices and tissues are not far from that basis. Manufacturers report the market fairly fine, no change in price having occurred since May 9th. The mills report that considering the paper trade depression, they are doing a fairly good volume of business and admit that the situation could be a good deal worse. While sales are not big in any line of light weight papers they bulk fairly large in the total and generally speaking there is an optimistic tone to the trade.

NEW YORK MARKETS.

New York, May 28—(Special Correspondence).—While business in the various kinds of paper at present is of moderate scope, it is no where near what it normally is, and it can be stated that the market is still in a quiet condition. Demand is almost entirely against actual and immediate requirements, and it is no secret that the average user of paper board today is not consuming usual amounts of goods because of the dullness prevailing in his own line. However, it can also be said that the situation is no longer going backward. Such change as is developing in the market is toward improvement. The recession in demand seems to have been definitely checked, and buyers are gradually though slowly increasing their operations as respects the absorption of paper supplies.

Here and there is a bright spot in the market which, owing to the general quietness, stands out in much prominence. For example, coarse tissue papers are in growing demand and activity in this branch of the market is one of the encouraging features of the present situation. Mills producing this class of paper are understood to be running at close to full capacity and prices in this connection are holding distinctly firm. The great bulk of demand is for tissue towels, napkins and toilet papers but it is authoritatively stated that sufficient orders are being placed for these kinds of paper to keep tissue mills quite busy. The newsprint market also is steadily working into a stronger position. Doubtless the firmness exhibited in this branch of the paper trade is due more to the strike of paper and pulp mill workers than to any other cause, but the fact remains that increasing buying interest is being shown in newsprint and quotations appear to be stiffening.

Apparently offerings of so-called "distress" lots of newsprint is the only factor keeping prices on this kind of paper from rising. Manufacturers are firm in their views and are insistent on the quotations named, but second hands are frequently placing newsprint on the market at concessions in price which gives publishers the idea that values are not as steady as they in reality are. It has been recognized for some time that the man in between the manufacturer and consumer of of newsprint—not so must a jobber or distributer as the speculator—had a good deal of paper stored up when the market commenced to break last year, and these same stocks are still waging a deterrent influence on the market situation, probably more so now than in recent months. It stands to reason, however, that such holdings will in due time be entirely liquidated, and if present manufacturing conditions continue, everything is in favor of a rise in print paper values. At least some publishers realize that current production of newsprint is far below normal, and they are coming into the market off and on, picking up such supplies as are to be had at what they consider attractive prices, largely with the idea of protecting themselves should the strike last long enough to be creative of a shortage of paper. Dealers say that because of the wide publicity given the surplus stocks of newsprint at the time the strike of mill operatives was declared it is a difficult matter to convince newspaper publishers that it is a wise thing for them to buy because of a probability of a scarcity developing.

There is no change in the book paper situation. The market is swinging along at an even gait, with the bulk of activity involving deliveries by mills on contract. Manufacturers are maintaining quotations although in frequent cases they are accepting orders at figures under those they quote, yet they are not publicly naming lower prices. Machine finished book is holding at between 6.50 and 7 cents per pound at mills for average quality, while super book is quoted at around 8.50 cents and coated at 10 cents upwards.

There is a fair demand for kraft wrapping paper and prices rule steady at 6.50 to 7 cents a pound at mills for No. 1 domestic kraft and half a cent less on No. 2 grade. Jute wrappings are favored with but a slight demand, but producers are not slashing quotations in an effort to stimulate buying, evidently figuring that when consumers are in need of supplies they will quickly make known their wants and meet the prices asked.

Box boards are moderately active. Signs are that most of the buying is being done by boxmakers with a view to covering forward requirements, as the average box plant is far from busy, yet there is more business current than there has been in recent weeks and box manufacturers seem pretty well satisfied that board costs are about as low as they will go. Plain chip is selling at $30 to $35 per ton at mills, with filled news board quoted at $32.50 to $37.50 f.o.b. mills.

GROUND WOOD.—Mechanical wood pulp is in a rather uncertain market position. So many varied reports are heard regarding the situation that it is difficult to determine just what the actual market condition is or what really constitute market prices. Some say the strike of mill hands and the resultant drop in production has made for a decidedly stronger tone and that prices are advancing; others assert that demand remains dull and that pulp can be obtained at just as low prices as before the strike. A fair range of quotations would seem to be between $30 and $35 per ton at grinding mills, depending on the haul to the consuming point and the freight involved. Indications are that inquiry is much improved though there is no concrete proof that actual buying has expanded to any material degree.

CHEMICAL PULP.—About the only change of note reported in the chemical wood pulp trade is a further decline in prices on Swedish pulps. According to cable advices to New York import houses, the Swedish manufacturers' association has established new quotations of 4.50 cents per pound landed here on easy bleaching sulphite, 4 cents on No. 1 unbleached sulphite and 3.75 cents on kraft pulp. These prices represent reduction of between a quarter and a half cent per pound from previously ruling levels, and bring foreign pulp down to nearer a parity with prices on domestic fibre. Foreign bleached sulphite, the bulk of which comes from Norway, is still quoted at an average of 6.50 cents per pound ex the dock on this side, with now and then an offering noted at slightly below this figure.

News grade sulphite is probably the strongest item in domestic pulps and is being held for around 3.75 cents a pound at producing mills. There is at least some supply of domestic bleached sulphite available at less than 6 cents notwithstanding that leading produc-

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ers of this kind of pulp continue to ask 6.50 cents in the open market.

A shipment of 125 bales of wood pulp arrived at New York this week from Hamburg, representing the first imports from Europe at this port in several weeks.

RAGS.—Although some of the low grades, chiefly roofing stock, are in fair call, paper manufacturers on the whole are according little attention to rags at present and the market is in a dull position. Prices are irregular and on a broad range. Some dealers are firm in their views and are holding stocks at comparatively firm levels, whereas others who are hard pressed to turn rags into money are accepting any reasonable bids that are registered. Roofing rags are a shade higher, about the minimum packers will consider being 75 cents per hundred pounds on No. 1 packing and 65 cents on No. 2's, and it must be said the market has every appearance of being fairly well sold up on this class of material. Old No. 1 repacked whites are offered at 6 to 6.25 cents per pound at shipping points, without attracting much buying, and new No. 1 white shirt cuttings are available to mills at 9.50 to 10 cents, washables at 5 cents, blue overall cuttings at 6 cents, light silesias at 6.50 cents, repacked thirds and blues at 2 cents and black stockings at 2 cents.

PAPER STOCK.—Waste paper is in about as firm a market position as any other description of papermaking raw material. In fact, there is a decidedly firm tone to prices on some grades of old paper and it is not the easiest thing in the world to locate sizable amounts of these kinds of stock. Soft white shavings are held by packers at a minimum of 2.25 cents per pound at shipping points for No. 1 packing, and old No. 1 kraft paper is quoted firmly at 1.60 cents or higher. White news cuttings have sold at 1.50 cents, and this is about the lowest dealers will consider on further orders, while flat stock is inclining upward in value at a quotable basis of one cent to 1.05 cents a pound on No. 1 heavy books and magazines. There is but a scattering demand for hard white shavings, which are quoted at 3 cents upward a pound at shipping points on No. 1 grade. Folded newspapers continue to be available at 35 to 40 cents a hundred pounds f.o.b. New York and No. 1 mixed paper at 25 to 30 cents, though in the Middle West and in sections of the East other than New York slightly higher prices prevail.

OLD ROPE AND BAGGING.—Old manila rope finds a fairly ready sale to paper mills at around a stationary price of 4 cents per pound at shipping points. Old bagging is mainly neglected and it is hard to say what market values actually are. No. 1 scrap bagging is offered by dealers at one cent per pound, roofing bagging at 50 cents a hundred and gunny bagging at about 1.25 cents per pound.

News From Our Advertisers

ECONOMY OIL BOXES (Patented).

Paper mill operators are annoyed with the leaking of oils from dryer bearings, causing framework and floor to be soiled and greasy and the edges of the dryer felts to decay. To secure the necessary lubrication in dryer bearings excessive amounts of oil are poured in by operators, not only making the "mess" so often seen, but causing an extravagant use of lubricants and in addition frequent renewals of expensive dryer felts.

Many mills are using grease, which is unsatisfactory, nasty and dirty, and very expensive.

The Economy Oil Box was invented by a practical man on a paper machine. It is very simple, consisting of a reservoir in the top of the cap of the dryer bearing. This contains oil, which is taken from the reservoir by threads of "candle wicking" by capillary attraction and is deposited on a piece of felt the width of the dryer journal which distributees the oil on the journal. If one strand of the candle wicking is sufficient that is all the oil that is fed to the dryer bearing; if that is not sufficient two or three strands may be used, but when the amount is determined the regulation is positive, continuous and reliable. None of the dirt that may be in the oil is carried over, only fresh, clean lubricating oil, and it is entirely the fault of the operator if any excess oil reaches the journal and thereby oozes out on the dryer head.

The regulation is so easily controlled that operators will minimize the amount of oil used. The box is of sufficient size to hold enough oil for approximately two weeks' run but should be filled once a week.

Note: The felt which is between the oil reservoir and the journal is simply fastened to the edge of the box by clips and does not extend into the oil; it is simply the means of distributing the oil across the entire face of the journal. The *wicking* feeds the oil.

It is an automatic and reliable oil box devoid of any complicated or delicate parts and free from any adjustments, and feeds just the amount of oil required.

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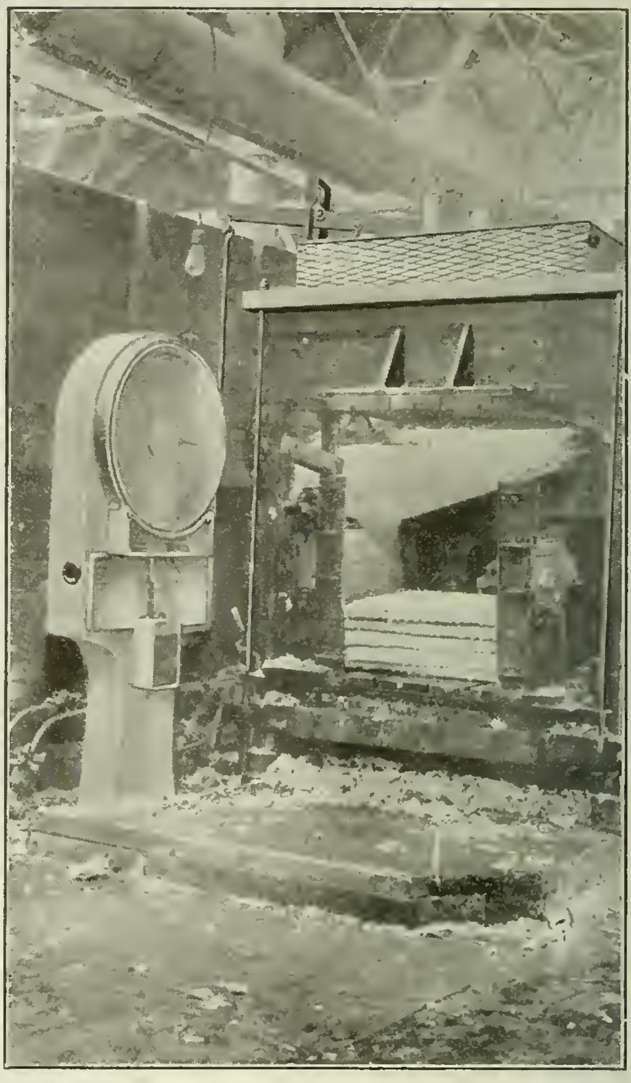
Further information may be obtained from the Hydraulic Machinery Company, Montreal.

BALE AWEIGH!

The accompanying cut is a pictorial reproduction of the Gurney Type Registering and Recording Dial Scales which have been installed by the Gurney Scale Company of Hamilton, Ont. and are now in use in the Chicoutimi mills. It is the first printing dial scale made in the world and is claimed by the Gurney Company to be a Canadian invention and development. As will be seen by the illustration the dial scales both weigh and bale the pulp at the same time. The scale actually prints the weights, not merely embossing them. The device is considered to be most simple and a man who cannot read or write but has his eyesight can give accurate returns of weights passing over the scale. Weights are recorded on a paper tape in clear, legible type, properly inked from a ribbon. Tickets can also be printed simultaneously with the type, making it possible to work out systems throughout any business. Up to certain limitations classifications can be made and the amount of outgoing goods can be totalled, the results being transferred to a card, making a perpetual inventory possible. It is claimed that the use of the scale will make production records accurate, save disputes with piece workers and customers, give accurate weight tickets like cash register receipts and can be made to fit any business, including that of pulp manufacture. The Chicoutimi Pulp Co. has a battery of the scales in use at their plant in Quebec and it is stated that they are giving general satisfaction to the company.

STEEL BELTING.

Messrs. Jones & Glassco, Reg'd. of Montreal, have been appointed Sole Representatives for steel belting in Canada. Whilst this steel belting is new in Canada many large industrial plants in England are users of this specially constructed steel belting for transmitting power. Full particulars will be gladly given by the Canadian representatives.



A Typical Scale Installation.

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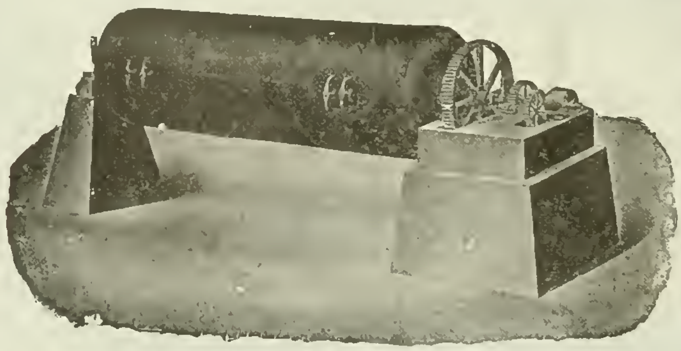

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EDITORIAL

THE CRAB DOES IT.

One of the most peculiar characteristics of the crustacean frequently seen on the beach is that it progresses backwards. Reverse motion is also possible for higher animals and even with men. A great difficulty in such circumstances, however, is that it is difficult for one to see whether he is going, or, if the object is seen by glancing backward, the vision is frequently distorted. An instance of an attempt to emulate the lowly crab occurred recently at Ottawa when the bill for the National Research Institute which had been warmly approved and supported in the House of Commons was killed in the Senate. The opponents of the bill apparently tried to cover themselves under the plea of economy and with the statement that it was wiser to postpone such action at the present time. As far as our observation goes, it is customary to plant the crop in the spring rather than wait until it is time to gather the harvest. One cannot hope to plant and to reap at the same time, it is only by planting now that we may expect to obtain results later on. We are disappointed that a majority of Senators cannot see the advantage of supporting a measure which will provide Canada with what is becoming one of the fundamentals of progressive nationality. Without organized science available to assist in the industrial and economic effort of the country an opportunity is being missed which cannot otherwise be made up.

While there will be regret in many quarters that the Research Institute bill did not succeed the first time to pass all the barriers at Ottawa, those who believe in its importance and efficacy should not be unduly discouraged. No doubt the Senators who opposed the bill acted according to their best understanding of the situation; it is quite probable that they acted rather in ignorance than prejudice. While a fair amount of publicity has been given to the results of the work which has been done under the direction of the Advisory Council for Scientific and Industrial Research, nothing like an adequate campaign has been carried on to inform the public and particularly the law makers, with the advantages and the necessity of inaugurating such an institution as the Research Institute would be. Canada must have an organization of this kind if we are to become the industrially important nation which our natural resources will give us the right to be. Success in industrial competition depends on quality, cost and service. The first depends on the skill and character of the workmen; the third on the attitude of the management, and the second on the application of science to the manufacture and distribution of goods. The Research Institute would affect directly one of these principal factors, namely, that of cost of production, and as this is a vital factor in competitive selling, developments along this line would be most helpful to Canadian industry and the whole country would derive the advantage from efforts along this line. We feel sure that if the Senators had had a proper conception of the purpose and possibilities of the Research Institute and a comprehensive vision of the possibilities of the development of our Canadian industries through the application of Scientific Research there would scarcely have been a dissenting voice when the bill was introduced. Let us hope that the measure will not long remain in the waste basket but that it will be introduced again, and backed by the vigorous and enthusiastic publicity which it deserves, there will be no question of its passing. It is possible, however, partially to redeem the situation by giving greater encouragement and assistance to the organizations doing work along the lines laid out for the Institute and which are now on the road to decay for want of proper attention. The views of the majority in the House should have the effect of emphasizing the need for scientific research in Canada along such lines as it is most appropriate for the Government to act and to assist. Let us hope that such work as is being done and should be, but owing to lack of adequate funds is not being, done at the Forest Products Laboratory will now receive recognition, attention and such financial assistance as will make the laboratory the help to the Canadian people that it should be.

THE GOVERNOR-GENERAL.

It seems that Canada just begins to get acquainted with the Governor-General when his term of office expires and his successor is appointed. The Duke of Devonshire has completed his service as the personal representative of the King in the Dominion of Canada. He and his household have entered enthusiastically into the life of the people here and many Canadians feel honored in sharing their friendship and acquaintance. The Duke has travelled extensively and has visited many of Canada's pulp and paper plants. He has taken a keen interest in the industrial life of the Dominion and its growth. The democratic spirit of the man is reflected in the happy way in which his children have participated in appropriate sports and in the kindly and helpful way which the Duke, and Duchess too, have joined in patriotic and welfare work. Their departure will be noted with general regret but they may feel sure that they leave many friends behind and a warm welcome whenever they may return to Canada.

A happier choice for the successor to the Duke of Devonshire as Governor-General of Canada can hardly have been made than is conveyed by the announcement that Lord Byng is to represent His Majesty on this side of the water. Lord Byng needs no introduction to Canada. As commander of the Canadian troops in France General Byng won the confidence and love of so many Canadians that he will find a very cordial welcome in the Dominion. It is not necessary to recite the many qualifications of Lord Byng for this position and we can do no more than hope that his stay in Canada will be as happy as we expect it will be.

A VERY GENEROUS ACT.

Some time ago we referred to the very excellent report by Mr. J. C. Wright, of the Federal Board for Vocational Education on his investigation into the fundamental requirements for the various pulp and paper mill jobs and his analysis of the work required of employees in different positions. The report was published serially in the Paper Trade Journal and was later reprinted by them for the use of the Joint Committee on Vocational Education without expense except for the negligible item of the cost of paper for the covers.

Five hundred copies were sent to the Secretary of the Canadian Pulp and Paper Association for distribution in Canada to those interested. The Secretary was under the impression that these were to be paid for and was therefore greatly and agreeably surprised when his cheque was returned with a very courteous letter from the Paper Trade Journal. Kindly acts such as this are continually cementing more closely together the ideals and affections of Canadians and Americans and it is a great pleasure to us to give credit for their courtesy and generosity to our contemporary in New York.

COBWEBS.

The difference between the groundwood pulp which sold last year at $130 and this year at $30 is $100.

Mr. O. Grattan Esmonde leaves Canada by request of a British Columbia court. His name sounds as if he had committed macaroni.

The Rolland Paper Co. is helping the public to appreciate Canadian papers by sending out a series of twelve folders on fundamental factors in papermaking. The first one, on "Rags," has just been issued.

There is a big fuss in Ontario over a Dominion Government Bill to control the flow of water in the Rainy River. The trouble seems to be in the Dominion's responsibility for an international waterway, and in the fact that both Manitoba and Ontario are affected. Ontario is interested in the development of water powers, both by private interests and by the Hydro.

Those who are still blessed with a mother and those who have only memories of mother's love, will sympathize with Sir William Price and his brothers and sisters in the loss of their mother, who has just passed on at the age of 81.

An employee of the Wayagamack Pulp and Paper Co. turned a compressed air hose on Willie Nault, who, as a result died of peritonitis. The company has been condemned to pay his widow $10,000. This death and fine are an awful penalty for an act of carelessness. There must be some way of putting more of the burden on the careless man.

Getting back to normal! The new price of newsprint is to be 4¾ cents. Whether it will go any lower will depend on whether the cost of production can be further decreased and whether competition from Europe can scare American and Canadian producers into a price-cutting contest.

The Minister of Forests and Mines for New Brunswick, through the Chief Forester, has prepared a fine set of placards urging greater care in regard to fires in the woods. The statements are forceful and the letterring is well done on metal. They should be a considerable help in preventing fires.

FRANK H. MILHAM DEAD.

Frank H. Milham, recognized as one of the leading paper manufacturers in the Middle West, died recently at Pasadena, California, the victim of a heart stroke. Mr. Milham, who at the time of his death was still active head of the Bryant Paper Company of Kalamazoo, Mich., was a successful executive whose extensive business connections included the following: President of the Eddy Paper Company, managing director of the Munising Paper Company, director in the Kalamazoo Vegetable Parchment Company, the Illinois Envelope Company, the Nashwaak Pulp and Paper Company and the Whalen Pulp and Paper Company. Mr. Milham was also director in the Kalamazoo National Bank, the Home Savings Bank, and other local Kalamazoo concerns. He served two terms as Mayor of the Michigan paper city and was at one time head of the Chamber of Commerce there. Mr. Milham is survived by a wife, a daughter, three brothers and two sisters.

Before the customer receives a shipping memo, it must undergo a lot of wear and tear. When the memo form is printed on tough, strong Writing Manilla, it's bound to reach its destination in better shape.

Don't miss the Technical Section Trip to Three Rivers, Shawinigan Falls and Grand Mere, leaving Montreal Tuesday evening, June 14. Advise the Secretary AT ONCE, if you want a Berth.

Sulphite Tests of Average Wood, Infected Wood and Chipper Dust

By JOHN S. BATES.

The plant experiments described in this paper were carried out last December and January in the Kenogami Mill of Price Brothers & Co., Limited. The writer while Technical Superintendent had the full assistance of the operating staff and wishes to acknowledge especially the co-operation of Mr. L. B. Decker, Sulphite Superintendent, and Mr. Charles Tennier, Wood Room Superintendent. The information is published with the consent of the company, in the hope that it may be of general interest to the pulp and paper industry.

Some years ago the yields of sulphite pulp from the various digesters were noticeably higher than at present and the first run was made on average pulpwood to find the reasons by careful measurements. A second commercial run was made on selected rotten or infected wood to compare the results, in view of the recent practice of saving balsam fir trees affected by decay. Following tests of sawdust losses in connection with chipping pulpwood, a third cook was made on the fine wood material rejected by the chip screens as a possible means of utilization in preference to burning in the boiler house. The tests were considered in relation to the regular sulphite for newsprint and board products.

Run No. 1 was based on average pulpwood taken from the block pile where it had been stored since the summer. A period of from one to three years had probably been required for cutting, river-driving, slashing, drum barking and stacking. On account of the weathering of the blocks it was not possible to identify species. Probably the wood ran about 75 per cent balsam fir and 25 per cent spruce (white and black) within reasonable limits. The wood was affected by partial rot to the extent of about 10 per cent of the total, the infection being largely in the balsam fir.

Preparing and Sampling Wood:

In preparation for the run 10 cords were measured in detail in the wood room and 7 cords were merely racked and counted in the yard. On passing through the wood room a few blocks required removal of small pieces of bark by scraping or by occasional use of the knife barker, the blocks in general being only washed by water spray. The wood was thrown off the conveyor in lots from fifty to a hundred blocks at a time, taking everything of 2-foot lengths but passing short ends of logs. The blocks were weighed in lots of ten on a Fairbanks 500-lb. scale. Each block was measured for length and diameter, and then immersed in a measuring cylinder to determine solid volume directly to one-hundredth of a cubic foot. This measuring cylinder proved very convenient, being made of a 12-inch wrought iron pipe 42 inches high with screwed flange and wooden base and having a gauge glass attached 12 inches from the bottom with a sliding scale graduated in hundredths of a cubic foot by direct calibration with water. The blocks were then piled in a one-cord rack 10 ft. long by 6.4 ft. high (128 cu. ft. for 2-foot wood) in such a way that the top blocks did not project above the upper line of the rack, and the count of blocks per cord was noted.

When the wood was chipped for the sulphite run, the total weight of sawdust coming through the chip screens was subtracted from the total weight of wood as racked to give the total weight of chips. Average moisture contents of sawdust and chips were determined separately and total oven-dry (moisture-free) weights of sawdust and chips were calculated, the sum of these representing the total oven-dry weight of wood as racked and giving the basis for calculating average moisture content of the original wood. This procedure for moisture figures was followed because solid wood is hard to sample and because it had been noticed that the moisture was slightly higher in sawdust than in accepted chips, perhaps on account of ice or water on the surface of the wood being carried through the bottom chip screens.

The first estimation of rot was made by judging the percentage volume of infected wood in each block. Heart rot was the most common and the weathering of the ends tended to obscure some of the reddish-brown color. The second estimation of rot was made by carefully sorting about 50 lbs. of chips sampled throughout the chipping operation. This appeared to be a reasonable way of determining the proportion of infected wood, although care had to be taken not to include the grey weathered wood and the sound yellow chips with the brown infected wood. By this separation of sound and infected chips the oven-dry weights and the moisture contents were compared. Nothing was attempted in the way of determining the degree of rottenness, as the methods are rather vague and it would be hard to prepare a small representative sample of infected wood for chemical analysis. In general the affected portions were of a decided brown color, although rotting had not proceeded to actual punkiness to a very great extent.

When the digester was ready, the conveyors and screens were cleared, the measured blocks were chipped and the screened chips were run directly into the digester till filled to the usual level. One 4-knife chipper and one 3-knife chipper were used in conjunction with two inclined chip screens having top plates with 1¼-inch round holes and bottom plates with ¼-inch round holes and a Lombard crusher to break and return the large chips. The coarse saw-dust formed by chipping and crushing was collected from the conveyors below the chip screens, weighed in boxes on a Fairbanks scale and sampled throughout to determine the average moisture figure. The accepted chips were sampled at short intervals for moisture test. Care was taken to make sure that only the measured chips entered the digester. The volume of the digester was calculated from the builder's blueprint and, after loading, the empty space at the top was measured to calculate the actual volume occupied by the chips. The figures showing the degree to which the chips packed in the digester were then open to calculation.

As a numerical expression of chip sizes the composite sample of chips was graded in the laboratory chip testing screen. This apparatus of special design consists of a wooden frame into which slide five or six sieves 24 inches by 36 inches in size built like drawers, the bottom in each case being standard screen wire (W. S. Tyler Co.) and the meshes ranging in standard steps from 1.05-inch openings downward;

the nest of sieves is supported from the floor on an oscillating frame of pipe fittings and is shaken horizontally by an eccentric at about 200 revolutions per minute and with 3 inches oscillation. This tester was also used for grading sawdust samples in the later runs, in which case ordinary 8-mesh and 14-mesh wire had to be used in the lower sieves in the absence of standard screen wire of the smaller sizes.

Cooking and Sampling Pulp:

The digester was cooked under the ordinary conditions applying at that period for newsprint sulphite. After blowing and washing, the pulp was pumped from the blow-pit to the stock tank and through the regular series of centrifugal screens. Care was taken to run the system clean before and after the test. The No. 1 Sulphite of newsprint grade was all run over wet machines instead of into the slush line, and the laps were weighed on trucks and sampled throughout for average moisture content. The screenings were refined as usual in Sturtevant Emery Refiners and run over a wet machine, the lot being weighed and sampled for moisture. The partly cooked chips and knots rejected by the knot screens located first in the series were collected by settling in a large box on the discharge line and measured for dry weight. White water and other losses were observed to be small, but were not measured. The yields of pulp were calculated to show the various relations to cordage and weight of wood for the three grades of product, as shown in the tables.

Testing the Pulp:

Sample sheets of No. 1 and No. 2 pulp were made up on the laboratory sheet machine without beating the pulp. Some of the sulphite knots were beaten in the laboratory ball mill and the fibre passing through a 20-mesh sieve was made up into sample sheets. The three sets of sheets were pressed and air-dried in the usual way and tested for average bursting strength in the Mullen tester.

Composite samples of No. 1 lapped pulp were opened up with minimum beating effect in the laboratory disintegrator, which consists of a 3-inch brass propeller rotating at about 1,200 revolutions per minute in a cylindrical shell and driven by a vertical shaft so that the propeller operates with downward thrust in a pail of stock. The disintegrated pulp was tested for comparative freeness in the Green drainage tester regularly used on groundwood pulp at an oven-dry consistency of 0.4 per cent and a temperature of 20 degrees Centigrade. To further compare the regular product with the special fibres from infected wood and sawdust, another sample of disintegrated pulp was carefully graded by wet screening through a nest of 8-inch Tyler standard laboratory sieves ranging from 20-mesh to 200-mesh to show the variation of fibre sizes.

Run No. 2 on infected pulpwood was carried through in the same manner as above (except that all the wood is measured in detail) and the cook was made in the same digester for direct comparison with regular pulpwood. During the week previous to the test rotten wood was collected in the wood room by throwing decidedly infected blocks off the conveyor. It was impossible to identify species but the selected wood was almost all balsam fir. This fact should be taken into account in interpreting the results, because the lower yields were due largely to the higher proportion of balsam fir and only slightly to the presence of decay. Heart rot was universal and about half of the wood mass was affected, some blocks showing practically 100 per cent of discoloration and others as low as 20 per cent. The frequency of large blocks pointed to the greatest trouble being in the butt logs of balsam fir. In general the infected portions were reddish-brown in color and the wood still firm, although some of the blocks were punky and occasionally hollow. It was not possible to state exactly how rotten the wood was, except in the manner described. However, in this respect the whole mass served as a test of quality in the sulphite run.

WOOD MEASUREMENTS

Average Measurements.	Run No. 1 Average Wood	Run No. 2 Infected Wood	Run No. 3 Chipper Sawdust
Species approx., balsam fir,—%	75	100	75
" " spruce,—%....	25		25
2 foot blocks per cord	237	195	
Length, inches..........	23 64		
Diameter, inches...............	6.2		
Solid wood per cord,—cu. ft.....	97.7	92.0	
Wet weight per cord,—lbs.......	4,503	4,500	
Moisture,—%................	51.1	57.29	
Oven-dry weight per cord,—lbs..	2,202	1,922	
Oven-dry weight per cu. ft.,-lbs-.	22.54	20.9	
Blocks showing rot,—%........	26	100	
Rot by estimating blocks,—%...	7	44	
Rot by sorting chips,—%.......	11	46	
Moist. in sorted rotten chips,—%		60	
Moist. in sorted sound chips,—%		51	
WOOD FOR ONE DIGESTER			
Measured wood, —cords........	17.1	18.0	
Wet weight,—lbs...............	77,000	81,005	
Moisture,—%................	51.1	57.29	
Oven-dry weight,—lbs..........	37,650	34,592	
Wet weight of sawdust,—lbs....	4,450	5,046	50,175
Moisture,—%................	54.78	61.89	58 0
Oven-dry wgt. of sawdust,—lbs..	2,010	1,923	21,070
Sawdust,—%............... ..	5.34	5.5	
Sawdust,—cords..............	0.91	1.0	9.8
SCREENING TEST OF SAWDUST			
Retained on 4-mesh,—%... ..		2	1
Between 4 and 8-mesh,—%....		32	23
Between 8 and 14-mesh,—%...		44	43
Passing 14-mesh,—%		22	33
Wood recovered as chips,—cords	16.19	16.96	
Wet weight of chips,—lbs.......	72,550	75,759	
Moisture,—%	50.87	56.99	
Oven-dry wgt. of chips,—lbs.....	35,640	32,584	
Vol. of chips in digester,—cu. ft..	4,446	4, 493	2,722
Oven-dry weight of chips per cu. ft.,—lbs	8.02	7.25	7.74
Volume of chips per original Cord, cu. ft.....	260	250	
Volume of chips per net cord, cu. ft	275	265	278
Volume of solid wood in chip space,—%..........	35.5	35.0	34.2
SCREENING TEST OF CHIPS			
Between 1 in. and ¾ in.,—%...	22	18	
Between ¾ in .and 2 in.,—% ...	31	36	
Between ½ in. and ⅜ in.,—%...	22	23	
Between ⅜ in. and ¼ in.,—%...	20	19	
Passing ¼ in. (4-mesh),—%....	5	4	

Run No. 3 on sawdust formed during the chipping and crushing of regular pulpwood presented an interesting experiment in relation to the runs on average and infected wood. With medium-sized chip screen openings and insufficient screening area a large proportion of the chips were going through the crusher, so that the sawdust from this source had been running higher than normal in addition to the sawdust formed from frozen wood in the chippers. The question arose as to the suitability of this waste material for making sulphite pulp to be used in small proportions in newsprint or board products in place of sending the sawdust to the boilers as low-grade fuel. The sawdust has the same composition as average pulpwood and nearly the same degree of cleanliness, but there is some objection to leaving it mixed with

Table II. SULPHITE COOKING DATA

WOOD MEASUREMENTS

	Run No. 1 Average Wood	Run No. 2 Infected Wood	Run No. 3 Chipper Sawdust
Digester No.	2	2	1
Size inside shell,—ft.	14x47	14x47	11x46.8
Vol. of lined digester,—cu. ft.	4,650	4,650	3,076
Portion unfilled at top,—cu. ft.	204	157	354
Net vol. of chips,—cu. ft.	4,446	4,493	2,722,
Proportion of digester filled,—%	96.0	96.6	88.5
Cooking acid at 27°C., gals approx	20,000	20,000	11,000
Total sulphur dioxide,—%	4.70	4.93	5.12
Free sulphur dioxide,—%	3.68	3.87	4.00
Combined sulphur dioxide,—%	1.02	1.06	1.12
Digester steamed	Dec. 20	Jan. 10	Jan. 3
Time to pressure,—hrs.	2¼	2¼	2¾
Total cooking time	9¾	9¼	15½
Pressure, lbs. per sq. in.	65	65	60
Maximum temp., degrees C	148	150	138
YIELD OF NO. 1 SULPHITE PULP.			
Weight of laps,—lbs.	47,965	45,320	32,770
Average air-dry pulp,—%	35 29	32.83	31.92
Wgt. of air-dry no. 1 Pulp,—lbs.	16,927	14,879	10,460
Air-dry pulp per original cord-lbs	990	827	
Cds original wood per ton of pulp	2.02	2.42	
Yield of oven-dry No. 1 pulp based on oven-dry weight of chips—%	42.71	41.1	44.67
Mullen test on unbeaten hand Sheets points per lb.	0.59	0.65	0.52
Freeness test of disintegrated pulp in green tester at 0.4% and 20°C., c. c.	670	670	633
Screening test of disintegrated pulp			
Between 20 and 65 mesh,—%	84	75	67
between 65 and 100 mesh,—%	3	4	6
Between 100 and 200 mesh,—%	3	4	3
Passing 200-mesh,—%	10	17	24

Table III. PULP MEASUREMENTS

	Run No. 1	Run No. 2	Run No. 3
YIELD OF NO. 2 SULPHITE PULP (Refined Screenings)			
Weight of laps,—lbs.	3,165	3,340	555
Average air-dry pulp,—%	34.24	39.07	42.93
Weight of air-dry No. 2 pulp,—lbs	1,084	1,305	238
Air-dry pulp per original cord,—lbs.	63	72	
Yield based on No.1 pulp,—%	6.4	8.8	2.3
Yield on oven-dry No.2 pulp based on oven-dry weight of chips,—%	2.74	3.6	1.02
Mullen test of unbeaten hand sheets points per —lb.	0.67	0.63	0.44
YEILD OF KNOTS, ETC. FROM KNOT SCREENS			
Weight of wet knots,—lbs.	835	1,640	None
Average Air-dry pulp,—%	22.9	26.86	
Weight of air-dry knots,—lbs.	191	441	
Yield based on No. 1 pulp,—%	1.13	3.0	
Yield of oven-dry knots based on oven-dry weight of chips,—%	0.48	1.2	
Mullen test of beaten hand sheets, points per —lb.	0.80		

regular chips on account of the danger of plugging digester strainers and the doubt about yield in the quick-cook process at high temperatures.

In prepartion for the test, a pile of sawdust sufficient for the smaller digester was collected in the wood-room from the material coming through the ¼-inch round holes of the bottom plates of the flat chip screens. The conveyors and chip loft were cleared and the sawdust fed directly into the digester. The sawdust was handled in three boxes, each holding 8.83 cubic feet levelled off and every fourth load was weighed before dumping on the belt conveyor. The boxes were counted and the average net weight used as a basis for calculating the total weight of sawdust. Every second load was sampled to determine the average moisture content which was somewhat higher than that of regular chips. The digester was cooked with live steam at rather low pressure and temperature, and therefore required a longer time than for chips. This was done to obtain fairly uniform circulation and to prevent plugging of the strainers and loss of sawdust through the relief line. No particular trouble was met with and the pulp was carried through the system in the usual way.

Summary of Results:

The results are summarized in the tables and require little explanation. A few points may be referred to briefly. As the cord is a variable measure in relation to actual volume and weight of wood, the figures in this connection are subject to some allowance and are not as definite as the true weight figures. The results quoted in terms of air-dry pulp are on the usual basis of pulp containing 10 per cent of moisture.

In Run No. 1 the average pulpwood averaged only 6·2 inches in diameter and was straight, thereby racking closely to give 97·7 cu. ft. of solid wood per cord. The wood was light in weight due to the high proportion of balsam fir (about 75 per cent), as shown by the oven-dry weight of 2,202 lbs. per cord or 22·54 lbs. per cu. ft. The total wood required for the digester suffered a loss of 5·34 per cent of sawdust at the chip screens. The yield of No. 1 sulphite pulp for newsprint paper was equivalent to 2·02 cords of original wood. The sample sheets showed fair quality with the presence of a considerable number of shives. The yield of No. 2 sulphite pulp in the form of refined screenings amounted to 6.4 per cent of the No. 1 pulp, this proportion depending a good deal on the character of wood and the methods of cooking and screening. The sample sheets showed satisfactory strength and quality suitable for board products. The partly cooked chips and knots were not measured very accurately and the true yield may have been about 2 per cent of the No. 1 pulp. The sample sheets showed that the knots could be refined to strong, brown pulp for the tougher grades of board.

In considering the production of sulphite pulp from the test it is apparent that there was obtained about all the wood could produce. This is shown by the total yield of oven-dry pulp amounting to 45.93 per cent of the oven-dry weight of wood in the digester. Comparing this test with a corresponding test made in 1913 in the same digester, the yield from the same number of cords was about 20 per cent less than seven years ago. This is probably explained by the much higher proportion of dense spruce at that time.

In Run No. 2 the infected wood was noticeably larger in size than average pulpwood, the number of 2-foot blocks per cord being 195 (including many split blocks) compared with 237 for regular wood. Rot therefore appears to be more extensive in the older trees and butt logs. Owing to irregularity the solid volume per cord was only 92 cu. ft., or 6 per cent less than average wood. Rotten wood seems to hold more moisture than sound wood. The selected wood was lighter on the dry basis than average wood, as shown by the comparative weights of oven-dry wood per cu. ft., 20.9 and 22.54; this difference was largely due to the infected wood being nearly all balsam fir, and the unit weight was slightly lower than the unit weight of sound balsam fir. It therefore appeared that decay had not caused much loss of wood substance, in spite of brown discoloration, etc., to the extent of 45 per cent of the total mass. The loss of sawdust, the sizes of chips, the details of cooking and other conditions were about the same as in Run No. 1.

The yield of No. 1 pulp was 7.44 tons compared with 8.46 tons for average wood. For true comparison the yield on the oven-dry weight basis was 41.1 per cent of the wood against 42.7 per cent for average wood, showing very little real difference. The strength, freeness, action on the newsprint paper machines and quality in general were surprisingly close to regular sulphite, although the color was more of a dull yellow and the screening test showed more fine fibres. The yields of No. 2 pulp and knots were a little higher than usual the wetter wood due to the absorbent action of decay probably having some bearing on this. The total yield of No. 1 pulp, screenings and knots was 45·9 per cent of the chips on the oven-dry weight basis, or exactly the same as in Run No. 1. The results showed that infected wood is still good for sulphite, at least provided that decay has only discolored the wood without reducing it to soft punk. The testing was not carried to full detail such as chemical analysis of the wood and pulp, bleaching quality, etc., and complete results might have brought out more differences from regular sulphite. However, the test cook served the purpose of showing the general comparison of infected and average wood for newsprint sulphite pulp.

In Run No. 3 the chipper sawdust represented average pulpwood reduced to a finely-divided condition. The material was practically all smaller than 4-mesh size and about one-third was fine enough to pass a 14-mesh sieve. On the other hand the particles were not as fine or broken up as ordinary sawdust from slashers or sawmills. In general the particles had their greatest length in the direction of the grain of the wood, which would help to preserve the fibre length of the pulp. The moisture content was 58 per cent, being higher than for regular chips (about 51 per cent). The sawdust packed well in the digester to the extent of 7·74 lbs. of oven-dry wood per cu. ft. compared with 8·02 lbs. per cu. ft. in the case of chips, the slightly closer packing in the latter case perhaps being due to the greater pressure of chips in the larger digester used. The cooking time of 15 hours 35 minutes and the maximum temperature of 138 degrees centigrade show that conditions were milder than for regular newsprint sulphite.

Washing in the blow-pit took a longer time than usual by reasons of the fineness or "slowness" of the pulp. The laps from the wet machine occasionally cracked a little when folding and the pulp was slightly dirtier than usual, but the product was comparatively good in color and general appearance. The yield of No. 1 sulphite pulp screened in the ordinary way was high and amounted to 44·67 per cent of the sawdust on the oven-dry weight basis, compared with 42·71 per cent in the case of average chips. The sample sheets showed fair strength, while the freeness and screening tests and microscopic examination of the disintegrated pulp confirmed the presence of short fibres. The yield of No. 2 pulp in the form of refined screenings was only 2·3 per cent of the No. 1 pulp and there was of course no reject from the knot screens that could be traced to the sawdust cooked. The total yield of No. 1 pulp and screenings amounted to 45·69 per cent of the sawdust on the oven-dry weight basis, which was almost as high as the corresponding figure of 45·93 per cent for average chips in Run No. 1. The sawdust pulp was used in making jute board on the cylinder machine, although it was considered that the fibre would be quite suitable for newsprint if properly mixed with regular sulphite.

RIORDON SHAREHOLDERS TO MEET.

The first official indication of the success of the recent appeal to the shareholders of the Riordon Company, Limited, is contained in a letter sent forward to them on Saturday over the signatures of the executive committee of the directors, under the chairmanship of Frank P. Jones, calling a meeting of shareholders at the Windsor Hotel, Montreal, at 11.15 a.m., Friday, June 10th. The following resumé of the matter is given in the Gazette.

The letter is optimistic in tone, and, while emphasizing the necessity of an immediate and more general response on the part of the shareholders to the appeal for new financing, states that directors find grounds for encouragement in the results already attained. It states that of the minimum of $5,500,000 required by the company as indicated in the directors' letter to shareholders of May 6th, about one half is assured. This result is regarded as sufficiently satisfactory, in view of the physical impossibility of completely covering the shareholders before June 1st, to warrant an extension of time for subscriptions and a continued effort to raise the capital required.

Accordingly, those who have already subscribed, are being requested to extend the time during which their subscriptions are effective, and those who have not already subscribed are urged in the letter to do so without delay.

The meeting of the shareholders is being called to secure their more active and energetic co-operation, particularly in view of the fact that negotiations with creditors are declared to be proceeding in a satisfactory way, and to place before shareholders a full statement of the company's position as revealed in the examination of its affairs by the directors during the past month.

It is stated in the letter that the business of the company has evidenced material improvement during the past thirty days, shipments of bleached sulphite pulp amounting to 4,811 tons, which is approximately 55 per cent of the company's capacity. This figure compares with 1,600 tons for the month of January, and is about 25 per cent in excess of the shipments for the preceding month (April.)

The feeling in quarters in close touch with the company and with the market for bleached sulphite pulp, its chief product, is understood to be decidedly more optimistic than it was a month ago. Given a sufficient working capital, the future of the company appears to be largely a matter of shipments and prices for its products, and it pointed out that the market for chemical pulp is approaching stabilization, the decline in values having preceded and been more precipitate than that in many pulp and paper products, notably newsprint.

Allowance of an extension of time for new subscriptions and the offering of opportunity for free discussion of the company's affairs at a shareholder's meeting will probably be accepted by investors in the company's securities as indications which, while clearly pointing to the absolute necessity of further support from shareholders, may be interpreted as reflecting a measurable degree of confidence on the part of those in charge of the company's affairs at the present juncture.

* * *

It is well to know one's limitations, but not to regard one's self as absolutely bound by them.

News From Europe

(Prepared by Dr. Paul Bartholow.)

Pulp and Paper Trade of Norway.

It is not likely, unless a sudden improvement sets in, that the wood pulp market will manifest any life. The mills are not operating, but are awaiting events. It is not easy to estimate how long this state of affairs will go on, but it is hoped that in another month there will be a return to activity. The paper market is also lifeless, few sales being reported at prices, which, as a rule, do not cover the costs of production. Meanwhile in the wood pulp market the situation is unchanged. No improvement is expected until after the coal strike. A curious feature is that the difficulties with which the British paper mill are confronted owing to the coal strike have not yet resulted in a rise of prices. In addition to these factors the seamen's strike and the impending general strike in Norway have affected prices in a manner which the labor leaders find distinctly disturbing. The public remains cool and the paper maker and other manufacturers have decided to "sit tight."—FARMAND, May 12, 1921.

The Effect of the Miners' Strike on Swedish Trade.

The miners' strike continues to paralyze business transactions with England. With regard to the continental trade the occupation of the Ruhr, which is generally regarded as inevitable, has postponed indefinitely the revival of industry. Further developments in connection with the "sanctions" are also awaited with concern. The chemical wood pulp market, in particular, is dead. No sales are reported. Most of the mills, which closed down for two or three months, owing to the strike, are working again in order to have sufficient stocks to meet running contracts, but it is anticipated that in July and August when the warehouses are filled up, the mills will be forced to close down again. A small sale of mechanical wood pulp for the American market is quoted at 200 kroner per not net f.o.b. The price, which is certainly low, has been accepted as a set-off to Finnish and Norwegian competition. Swedish wood pulp mills are badly handicapped by the low rate of exchange on Finnish marks and Norwegian kroner. The newsprint mills in Sweden have have also bought parcels of wet mechanical at 100 kronor per ton net.—AFFARSVARLDEN, May 4, 1921.

The Paper Industry in Switzerland.

During the war Switzerland developed a good many industries designed to supply the needs of the belligerants and of her own population. But with the return of peace and the economy enforced by high prices, consumers stopped buying to a great extent and overproduction was the result. Besides this, many banks and commercial houses had placed funds with neighbouring states, the money of which has greatly depreciated, notably in the case of the German mark and the Austrian crown, which fell to almost nothing. This drop in exchange had several consequences, it closed foreign markets to Swiss goods, restricted credit, and caused many banking difficulties. Another rather extraordinary result was the decision of the Government to restrict the import of German and Austrian goods, which were very cheap, while practically forcing Swiss consumers to buy in countries at much higher prices. What might be expected has happened. The consumer refuses to buy and the Swiss mills, so far from being helped, are closing down. The paper industry, for instance, has been obliged to give into a system of duties which economists call ruinous. At first the business depression in the paper trade was combated valiantly, but gradually mills began to close until at present the lack of business is general. For example Stocklin and Co. of Basle,, and Walty and Co. of Ostringen, and the Utendorf mills have suspended. As regards the paper industry the number of workmen in 1919 was 3500; of these 2000 have been laid off, while many others are working on part time. The effect on imports may be seen from the following table comprising the year 1913 and 1920.

	1913	1920
Grey boards	20,370 tons	34,073 tons
Newsprint	3,323 tons	11,709 tons
Printings, writings	43,681 tons	86,485 tons

Thus imports of newsprint, for instance, increased 50 per cent.—LE PAPIER, April 1921.

Norway and Newfoundland.

Norges Utenrikshandel contains an interesting review of the relative industrial resources of Norway and Newfoundland. It is pointed out that the two countries produce similar things—that their fisheries, paper and pulp mills are the most important industries, and that competition is consequently worthy of notice and careful study. Wood pulp, paper and groundwood mills have a plentiful supply of wood which abounds in Newfoundland. Production is steady. For instance the Anglo-Newfoundland Development Co., which furnishes the Northcliffe group of newspapers, has an output of 200 tons of paper a day. At Bishop's Falls, Reed and Co. produce about 100 tons of pulp a day. A new Norwegian plant is situated on the east coast at Bonavista Bay by Grand River. As is well known it is prepared to make cellulose and paper, and is not inferior in capacity to the new English outfits. The export of props, except from Labrador, is forbidden. In Labrador, however, it is stated that an American and English company for the export of props is in full swing. All signs indicate a great future in paper making for Newfoundland and Labrador.—PAPIR-JOURNALEN, April 23, 1921.

WALL BOARD CASE SETTLED.

Nearly a year and a half ago the Niagara Wall Board Company of Buffalo N.Y. of which John B. O'Brien is President and C. C. Hullinger is Secretary and Treasurer, commenced action against the Tonawanda Board and Paper Company, a subsidiary corporation of the Beaver Companies, alleging breach of contract. After many delays and postponements for trial, a settlement was effected by the Beaver Companies paying $35,150 to the Niagara Wall Board Company.

The Niagara Wall Board Company was founded by the above prominent former officials of the Beaver Board Companies. The Niagara Company operates a board mill and wallboard finishing plant at Penn Yan, N.Y. Its officers and stockholders are also affiliated with the Maie Pulp and Paper Company of Skowhegan, Maine, The Niagara Fibre Company of Penn Yan, N.Y. and the Cornwall Pulp and Paper Company, Limited, Cornwall Ont.

Its own maker would scarcely recognize a yard order after it has passed through the wear and tear of a lumber yard. Writing Manilla fits in for such jobs as though it were made for that one purpose.

The world is largely made up of people who think they could do the other fellow's job better

The International Paper Mill at Three Rivers

A great deal of interest has very naturally centered about the immense pulp and paper plant of the St. Maurice Lumber Co., at Three Rivers, Que. The editor had the pleasure of visiting this plant a short time ago and took a few pictures which are herewith shown. Since that time there have of course, been a number of important developments. It is quite certain for one thing that there is no longer any snow on the premises and that it is not necessary to blast the wood out of the block pile, an operation which is shown in one of the pictures.

The mill when complete, will produce about 240 tons of newsprint per day and this will require about 200 tons of groundwood and 54 tons of sulphite pulp. Any excess production of either grade of pulp can be used in the United States mills of the International Paper Co., which controls the plant at Three Rivers.

The mill is all steel frame covered with concrete and the design and construction is in charge of the Engineering department of the International Paper Co.; Mr. A. H. White is Chief Engineer.

Plenty of Power.

For a mill of this size a considerable amount of power is necessary. Electric current from the Shawinigan Falls Water & Power Company at Shawinigan Falls, will be delivered to the Mill at 66,000 volts to be transformed to 2,200 volts for the grinders, and to 550 for motors for general purposes.

A General view of the Mill, as seen from the top of Pulpwood Stacker.

The Mill will use in the neighborhood of 20,000 h.p.; a large proportion of which will be consumed by the electrically driven magazine grinders.

For driving the paper machines, drying paper, cooking sulphite, etc., there are eight B. & W. boilers, of about 500 rated boiler-h.p. each. Crude oil will be burned under these boilers.

An underground, reinforced, concrete storage tank of 150,000 barrels capacity has been built for fuel oil storage. The oil from tank steamers is pumped into these storage tanks.

To take care of waste from the wood preparing and to furnish some steam, there have been installed five horizontal tubular boilers.

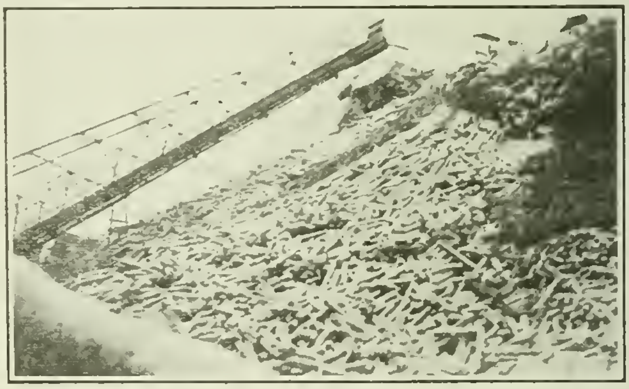
Filter Plant.

All the process water in the Mill will come from the St Maurice River and, that the quality may be of the best, a gravity sand filter of 20,000,000 gallons per 24 hours, has been installed. This filter system was designed and furnished by the Norwood Engineering Company.

Wood Preparation.

This part of the plant, which will be seen from one of the pictures, is located at the river side and the logs are brought up on a Ryther and Pringle parallel chain log haul, cut into 4′ lengths and passed through 12 x 45′ barking drums of which there are 3 supplied by the Canadian Ingersoll-Rand Co. A cable conveyor carries the blocks to stackers which are permanently located. As the pile forms, the wood is conveyed radially by portable extension conveyors laid on the top of the pile. The stacker now installed will take care of 15,000 cords and there is place and provision for the installation of 2 more wood storages. A three strand chain conveyor carries the wood from the pile in winter, or directly from the barking drums in summer, to the pulp mill. At the present time only the sulphite mill is in operation, this being located on the high ground a little back from the river and about on the level of the main floor of the paper mill. The groundwood mill is to be on a level with the sulphite mill. There will be 12 magazine grinders built by the Waterous Engine Works Co.

As the wood passes into the pulp mill it is carefully examined and any pieces insufficiently barked are further cleaned in a Green Bay barker and the wood is thoroughly washed as it passes to the chippers. There are two of these of the Carthage make and the chips pass from them over two Sherbrooke shake screens. Oversize chips are treated in a Lombard crusher. A bucket elevator carries the chips to an enormous chip bin. An unusual feature of this bin is that instead of being partially supported by the walls the entire weight is carried on the center columns.



Loosening a "Cap" on the wood-pile. The cloud of smoke from the Dynamite is visible

Digester Room.

In this department are two digesters 15 x 47′ built by the Chicago Bridge and Iron Works. Provision is made for a third, which is also true of the blow pit equipment. There are now two blow pits, each with a capacity of two digester charges. After washing in the blow pits the stock is removed to a storage tank where it is continually agitated and from which it is pumped to the Impco knotters and then passes through the Sherbrooke fine screens. The tailings screen prevents loss of acceptable fibre from the knotters.

At the present time two Glens Falls wet machines of the Rogers type run the pulp into sheets which are baled for shipment to the Niagara Falls mill of the International Paper Co. On account of the quality of paper produced at that plant the Three Rivers mill is now making easy bleaching sulphite and cooking 11 hours. The production of the two digesters operating under these conditions is about 40 tons and they consume from 75 to 80 cords of wood per day. When the full plant is in operation and news grade sulphite is produced the three digesters will make about 90 tons.

In connection with the sulphite plant it should be remarked that a well equipped laboratory has been installed and a competent chemist in charge. This is located adjacent to the Superintendent's office. There is also provided in this department a properly equipped locker room and lavatory.

The Paper Mill.

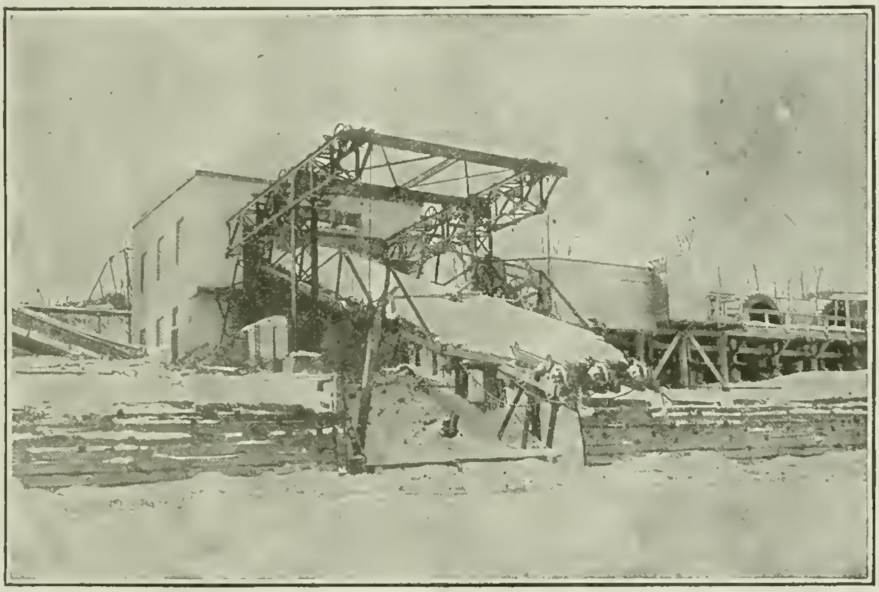
At the time of the editor's visit the walls of the paper machine room were going up and the roof was being laid. The steel work for the machine room floor was in so that a visitor could get at a better idea of the size of this department than simply to mention that this room is 173′ wide and 320′ long. It will accommodate 4 Bagley and Sewall machines each with a 164″ wire. It is understood that they will be equipped with the General Electric Co. type of electric drive and will produce at least 60 tons of standard newsprint each per day.

The whole plant appears to be laid out on generous lines without any indication of being over built. The construction has been carried forward throughout the winter so that the buildings are now practically complete for the first unit.

Technical Section Visit.

The summer meeting of the Technical Section will visit this plant on the 15th of June and the members will then have an excellent opportunity of seeing the newest newsprint mill in Canada and one of which will no doubt prove to be one of the most efficient. After visiting other mills in Three Rivers the Technical Section will proceed to Grand'Mere and see in operation the fastest running newsprint machines in the world which are housed in a fine new machine room at the Laurentide mill and after that, the plant of the Belgo Industrial Co., at Shawinigan Falls, will be visited.

The editor's thanks are due to Mr. T. R. Remsen, construction manager of the St. Lawrence Lumber Co.'s new mill, for much courtesy and attention.



Log Haul-up, and Barking Drums, as seen from the River.
Ready for Winter.

CHEMICAL REACTION AFFECTS CASEIN GLUE.

Although casein glues are highly water-resistant, they ultimately decompose when exposed to a damp atmosphere for a long time. For many months studies have been under way at the Forest Products Laboratory to discover the cause of this decomposition.

The decomposition study is still far from complete, but the conclusion has been reached that the decomposition of ordinary alkaline casein glues is not due to the action of bacteria or molds. It appears to be due entirely to chemical action of the alkali in the glue. This conclusion is based upon the following observations:

Increasing the amount of alkali in the glue increases the rate of decomposition when the glue is kept wet.

Glues containing no sodium hydroxide, although deficient in some important respects, do not decompose as rapidly as similar glues containing sodium hydroxide.

Cultures of molds and bacteria could not be obtained from decomposed alkaline glues.

Some chemicals which have antiseptic properties are found to improve casein glue, but this improvement is due to their chemical action rather than to their toxic properties.

Glues can be completely decomposed in a short time at temperatures above that at which bacteria can grow.

Further work is being directed toward the production of glues which will resist chemical decomposition and at the same time be impervious to the action of fungi and bacteria as well as moisture.

The large pulp mills, which have been under construction at Bear River, Nova Scotia, for the past two years, were opened recently, when they turned out their first cooks of sulphate pulp. The cost of its construction was $1,500,000, with an estimated output in value of the same amount. The company has received an order from the United States which will keep the mill in operation for three years, working both day and night shifts, employing over two hundred men. This is the only chemical pulp mill in Nova Scotia.

U. S. PULP PRODUCTION FOR APRIL.

The following is a tabulation by the U. S. Federal Trade Commission of the production and stocks of finished pulp, in tons of 2,000 pounds on an air-dry basis, for April, 1921, compared with April, 1920, for the operating mills. The average production is based upon the reports covering the years 1917, 1918, 1919 and 1920, and the average stocks are based upon the stocks carried for the year 1919 and 1920.

	Number of mills.	Production for month.	On hand end of month.
Ground Wood Pulp:			
April, 1921 . .	162	159,442	217,308
Average . .	...	122,746	137,165
Sulphite, News Grade:			
April, 1921 . .	63	50,381	23,345
Average . .	..	64,922	19,800
Sulphite Bleached:			
April, 1921 . .	31	22,966	13,707
Average . .	..	44,096	8,710
Sulphite, Easy Bleaching:			
April, 1921 . .	9	5,594	776
Average . .	..	6,474	1,555
Sulphite, Mitscherlich:			
April, 1921 . .	7	4,102	2,277
Average . .	..	6,708	1,655
Sulphate Pulp:			
April, 1921 . .	20	8,910	7,140
Average . .	..	13,832	5,908
Soda Pulp:			
April, 1921 . .	25	16,701	9,545
Average . .	..	32,968	5,938
Other than wood pulp:			
April, 1921 . .	5	710	194
Average . .	..	910	159
TOTAL—for all grades:			
April, 1921		268,806	274,292
April, 1920		350,194	160,515
April, 1919		284,984	241,613
Average		292,656	180,880

Total stocks of all grades of pulp in the mills on April 30, amounted to 274,292 tons. Mill stocks of ground wood pulp and "Other Grades" increased during the month.

Ratio of Stocks to Average Production.

Comparing the stocks on hand at the domestic pulp mills at the end of the month with their average daily production based on the reports covering the years 1917, 1918, 1919 and 1920, the figures show that:

Ground wood pulp stocks equal 46 days average output.

News grade sulphite mill stocks equal 9 days average output.

Bleached sulphite mill stocks, equal 8 days average output.

Easy bleaching sulphite mill stocks equal 3 days average output.

Mitscherlich sulphite mill stocks equal 9 days average output.

Sulphite mill stocks equal slightly more than 13 days average output.

Soda pulp mill stocks equal 8 days average output.

Mill Stocks of "other than wood pulp" equal about 6 days average.

Total mill stocks of all grades equal 24 days average output.

Loss of Production.

The idle machine time of grinders and digesters reported to the Commission for the month of April, 1921, is shown in the attached tabulation. The time lost in April, 1920, is shown by grades and reasons for purposes of comparison. These figures do not include 15 mills not in operation.

Loss of Production.

Grade.	Total. 1921.	1920.
Ground Wood Pulp—		
Number of grinders..	442	670
Total hours idle..	96,251	72,265
Sulphite News Grade—		
Number of digesters..	81	90
Total hours idle..	17,808	8,711
Sulphite Bleaching—		
Number of digesters..	76	62
Total hours idle..	23,099	3,649
Sulphite, Easy Bleaching—		
Number of digesters	7	3
Total hours idle....	1,466	1,052
Sulphite Mitscherlich—		
Number of digesters..	24	14
Total hours idle..	8,902	2,391
Sulphate Pulp—		
Number of digesters..	30	29
Total hours idle..	9,118	2,752
Soda Pulp—		
Number of digesters..	150	61
Total hours idle..	41,914	7,887
Other Grades—		
Number of digesters..	4	4
Total hours idle..	1,536	512
Total number of grinders and digesters..	814	933
Total hours idle..	200,094*	99,219

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*Includes 133,767 hours due to lack of orders.

DR. RALPH E. RINDFUSZ ELECTED SECRETARY OF THE AMERICAN WRITING PAPER COMPANY.

Dr. Ralph E. Rindfusz, assistant to the president of the American Writing Paper Company, has been elected secretary of the big paper-making organization to succeed Michael N. Slotnick, resigned. In addition to his new duties as secretary, Dr. Rindfusz will continue as assistant to the president and will also retain general supervision of the department of chemical research, which will remain under the direct capable management of Dr. L. E. Roberts.

Dr. Rindfusz has taken an important part in formulating the recently announced service plan by which American Writing Paper Company products are being distributed by Eagle-A Service Houses throughout the country. By this arrangement, which is undoubtedly one of the most vital developments in providing printers with their most important raw material, the complete line of Eagle-A papers will be handled in its entirety by every one of a large number of the principal paper merchants of the country. In this way, it becomes of the utmost convenience for printers to obtain the only complete line of fine papers in the world without the necessity of shopping among several distributors, thus resulting in greater service through maximum efficiency and economy in paper buying.

British Trade News

(From Our London Correspondent.)

London, May 23, 1921.—The set back which the British trade has received is attributable, according to Mr. P. W. Holden, the chairman of Wiggins, Teape, & Co. (1919), Ltd., to overbuying, financial stringency, and collapsed exchanges in various parts of the world. He estimated that about an extra one-third of his firm's output was deposited on the Home Market—a stagnant market—and it was well nigh impossible to do business. A dividend was agreed upon at the rate of 5 per cent. for the year ending 31st December 1920 "upon the amount for the time being paid up or credited as paid up on the ordinary shares, the same to be paid less income tax to the shareholders appearing on the register at the 4th May 1921."

Prince of Wales Visits a Paper Mill.

The Prince of Wales is taking the same amount of interest in the British paper mill, while on a tour, as he did while in Canada on his trip through some of the mills. In fact he had his appetite whetted in Canada for paper and pulp. The Prince is now visiting the Duchy of Cornwall and on his way through Devon he visited the Devon Valley Paper Mill in which Messrs. Wiggins, Teape & Co., are interested. He took a great interest in all the departments and two workers with 65 years service and 36 years were introduced to him. One of the great sights arranged for the Prince was an inspection of the papermaking machines, he became fascinated with them and spent some time listening to an explanation as to how they were working. When the inspection was over he asked to see all the men who fought in the Great War and he had a good shake of the hand for each man on his lucky return home.

Paper Makers State Their Case.

For some weeks past I have been writing on the Anti-Dumping Bill and the efforts of the British Papermakers to get paper brought within its scope. "Free Traders" and "Protectionists"—and "luke warm" politicians with no policy at all—have been writing and speaking their views and I have endeavored to summarise them. Now I give the case for the Paper Makers. It states, *inter alia*:—"There are 53,000 workers employed in the papermaking industry of Great Britain and Ireland. According to the latest figures supplied by the unemployment Department of the Ministry of Labor, covering the week ending April 15th, 1921 (before the effects of the coal strike were felt) 24,455 employees were in receipt of unemployment benefit. Up to the end of September 1920, the paper mills operated to full capacity, and from the termination of the war till that time the prices of foreign papers were generally higher than the prices of the home manufactured article. The collapse of the oversea market towards the end of 1920 forced continental producers to send their surplus tonnage to their open market—Great Britain—and quotations were given and paper was sold in this country at far below the cost of manufacture in British mills, which resulted in most cases in curtailing the operations and in some cases in the complete stoppage of home mills. The foreign producer is able to undersell British mills at a profit to himself, owing to heavily depreciated currencies, viz:—Price per ton delivered in Great Britain in 1914: Finland £9 12s. 6d. was equal to 230 Marks; Germany, £9. 18s. 4d. was equal to 200 marks. In 1921: Finland, £25 10s is now equal to 4,600 marks; Germany, £25 is now equal to 6,600 marks. Depreciated currency allows foreign mills to obtain 20 to 33 times their pre-war price, cutting British makers by 25 per cent. It is obvious that no British producer can meet competition of this kind and that some immediate corrective for the collapsed exchange is absolutely necessary."

What a Subsidy Can Do!

The statement next goes on to deal with pulp wood and Canada is selected for comparison. It says: "From the best information available to the British trade today, the cost of producing newsprint paper in Finland is 2,300 Finnish Marks per ton. The cost of producing similar paper in Germany 2,400 Marks per ton. The German mills have been subsidised by the German Government as to their chief raw materials, wood being supplied at a price of one-fourth of that prevailing in Sweden, Norway, America or Canada. The coal for the German mills is also supplied at a figure far below the economic cost of production. Skilled labor in Finland on their present scale is equivalent to 18 shillings per week ($4), in Germany to 14 shillings; in Austria to 6 shillings, per week and in Belgium to 32 shilings per week, roughly. Similar labor in British mills is paid from £5 10s. to £6 10s. per week.

The paper mills in Great Britain and Ireland, working full capacity, are capable of producing 1,200,000 tons per annum. Of this total, the capacity for newsprint paper amounts to 450,000 tons per annum. The present consumption of newsprint paper in Great Britain is less than the amount which could be produced by British mills alone, so that there is no necessity for importing this grade of paper from foreign mills. Since the beginning of this year the importation of newsprint from abroad has steadily increased month by month, so that the figure of importation for the last month available is more than double that of the first month of the year. In addition to present importations of this class of paper alone, which exceeds 2,000 tons per week, the British industry is aware of large contracts recently placed with continental supplies, which, if executed will entirely submerge the industry of manufacturing newsprint in this country; now, under the existing circumstances, can the British hills hope to gain from any general revival in trade in Great Britain, for the business will go to the foreign producers who are (helped by their depreciated currency) able to quote lower prices."

A Remedy Suggested.

Dealing with the export trade the British Paper Makers say that prior to the war it was considerable and in 1913, 174,945 tons of all kinds were exported. "Leaving out the period of the war", they go on to say, "when export trade was difficult, the British papermaker was only just beginning to get back his export trade in 1920 (total for that year 117,621 tons), when the slump produced by the inroads of foreign paper upon the British market reduced the production of the British mills to such an extent as to seriously increase his cost of production, thus adversely affecting his price for export, with the result that only 23,094 tons of British paper was exported in the first three months of this year. If it is possible by regulating the exchanges to bring the home trade back to British mills, it will again be possible for them to compete in the export markets of the world.

The point has been raised by newspaper publishers that British paper mills are unable to compete with the foreigner owing to their having large stocks and contracted for further stocks of their chief raw material—wood pulp—at prices current during 1920. The answer to this is that the British paper industry protected itself for its raw material for the usual period in advance, and only for the usual period. At the same time, it must be stated in fairness that the British mill owners are perfectly willing to write down these stocks of pulp to the present replacement values, assuming the loss thereby incurred, and as evidence of this willingness they have this week reduced their prices of newsprint from 4d. (8 cents), to 3½d. (7 cents) per lb. and if they can obtain orders which will enable them to run their mills at anything like full capacity, they will be able to still further reduce their price.

It should be particularly noted that all the Paper Makers ask for is that they should be treated under the second part of the Bill, relating to depreciated exchanges, in exactly the same way as other trades who have suffered, and to be allowed to place their case before the Committee of the Board of Trade."

This statement submitted for members of Parliament and others on behalf of the British Paper maker is a very fair one. Facts are given and it reflects great credit on them the way the position has been placed on paper. The consumer, of course, does not care one iota about British papermaking, so long as he can get a cheap raw material, and beyond this his interest in papermaking ends.

The Miners Strike.

It is regrettable to have to state that the strike of coal miners is not yet settled. Industry of all kinds is gradually coming to a standstill and the unemployment roll swells every day. Today I was speaking to a Government official who has just returned from an inspection in South Wales. He says the miners are idle, standing about with their hands in their pockets, there is no sign of hunger and everything pointed to the fact that the dispute might last another two months unless something unforseen happens. The position today is really serious for paper mills.

Pulp Market.

The pulp market continues dull and lifeless. Prices, however, are unchanged. With the present condition of the paper industry and a serious coal miners srike in existence one must naturally expect a great depression in pulp buying.

Among the Scottish paper mills closed down are the Caldercruix & Moffat paper mills (Messrs. R. Craig & Sons, Ltd.), and the Culter Paper Mills, Deeside, Aberdeen, which employs about 700 people. These mills are closed until the coal miner's strike is ended.

P.R. WILSON WINS ARCHITECTURAL HONORS.

An item in a Montreal paper a few days ago which caught the attention of the editor stated that P. R. Wilson, of Sault Ste. Marie, was one of the seventeen out of 160 competitors from all over Canada whose design for Canadian Battlefields Memorial to be placed on the fields of France had been accepted by the committee. We find that Mr. Wilson, who is 21 years old, is the oldest son of Mr. Percy B. Wilson, President of the Canadian Pulp and Paper Association. He is in his second year in Architecture at McGill University, and his success in this competition indicates ability of no common order and gives promise of a successful career in his chosen profession. He is now engaged upon the preparation of the model of his design which is to be submitted for further consideration to the Commission appointed to deal with the matter. We are sure that the industry will be pleased to hear of this honor that thus falls on the house of the president.

CONSUMPTION OF PAPER IN THE UNITED STATES—1920.

The following table, which gives the consumption of various grades of paper in the United States in 1920 is taken from the April Bulletin of the News Print Service Bureau.

Grade	Mill Stocks Jan. 1 1920	Production 1920	Imports 1920	Exports 1920	Mill Stocks Dec. 31 1920	Quantity Available for Consumption
Board .. .	40,329	2,313,449	*	*	53,104	2,300,674
Newsprint	15,369	1,511,968	729,869	45,976	24,763	2,186,467
Book	23,279	1,104,464	2,170	47,845	25,005	1,057,063
Wrapping	26,271	831,889	2,471	30,632	35,800	794,719
Fine	31,516	389,322	*	*	30,312	390,526
Felts, etc	5,315	366,941	*	*	13,420	358,836
Bag	2,087	211,923	*	*	3,031	210,979
Tissue ..	5,697	177,447	*	*	8,774	174,370
Hanging ..	1,452	113,824	*	*	3,027	112,249
Other .. .	12,482	313,387	‡25,000	‡140,000	17,160	193,709
Total ..	164,317	7,334,614	759,510	264,453	214,396	7,779,592

* Not separately reported. ‡ Estimated.

TO MAKE LEATHER BOARD.

The Rumford Pulp Products Company, it is reported from Boston, has secured the old magnesia mill in Rumford, are remodeling it and installing the machinery necessary for the manufacture of a certain type of leatherboard which is used for innersoles and counters on some grades of shoes. For many years the gigantic plant of the Oxford Paper Company in Rumford has been producing a form of pulp from the knots and ends of logs consumed in their pulp mills. This material could not be used in the production of the good grades of book paper which the Oxford Company specializes in. The inferior pulp in question has been shipped out of the State in the past and used for some wrapping paper and bag paper mills. Now it will be used by the leatherboard company.

A RAPID METHOD OF DETERMINING MOISTURE CONTENT OF WOOD.

A method used by the Forest Products Laboratory for determining the amount of moisture in chips and sample borings from large peices of wood requires little equipment and only a few minutes time. The moisture content of pulpwood chips can be found by this method in from 7 to 10 minutes.

A specified weight of wood chips, usually 100 grams, is immersed in kerosene in a flask or retort, and the mixture is heated. The water in the chips changes to steam at 212 degrees, and goes out through a glass tube in the cork of the flask, is condensed by a water jacket surrounding the tube, and caught in a measuring glass. The boiling point of kerosene being higher than that of water, all the moisture will be driven off the chips before the oil vaporizes to any great extent. The oil that does go off in the form of vapor is condensed and caught in the same graduate with the water. When the evaporation of moisture is complete, the oil and water are allowed to remain a few minutes until the water has all settled to the bottom of the graduate. The amount of moisture in the wood chips is then found by a direct reading.

This method has been checked for accuracy with the method of weighing samples before and after oven drying, and the variation found to be less than 1 per cent.

The question for each man to settle is not what he would do if he had means, time, influence, and educational advantages; but what he will do with the things he has.—Hamilton Wright Mabie.

UNITED STATES NOTES

Judson G. Rosebush, president of the Patten Paper Company, Appleton Wis., and several Green Bay capitalists have subscribed $500,000 new capital in a reorganization which greatly strengthens the Northern Paper Mill Mills at Green Bay. The new interests entering the big Fox River Valey concern are paper men of wide experience.

Following a conference held between mill officials and union representatives last Thursday, it was announced that a settlement had been effected, ending the strike which was called some weeks ago by the 500 employes of the Northern Paper Mills. The men agreed to accept a wage cut of 16 2-3 per cent. Riots and disturbances, occasioned by interference with strikebreakers on the part of pickets, had led to a call for troops being made to Governor Blair of Wisconsin Thursday morning, but the latter was not required to act when the strike suddenly terminated after the conference Thursday night. The request for troops was made after Sheriff Nicholas Ryan of Brown county and a force of armed deputies were overpowered at the gates of the mill in Green Bay. By the terms of the settlement no person in the employ of the mill Saturday, May 28, will be displaced to make room for a striker. This means that about 200 men, former employes and strikebreakers, who have continued working, will keep their jobs and that an equal number who struck will be without jobs. This is about one-third of the total number of employees. The mill remains an open shop plant and the settlement provides that there shall be no prejudice toward union or non-union men in employment, on pain of dismissal. The settlement marks also the termination of all labor troubles in the Fox River Valley paper industry. Most of the mills in adjoining cities accepted reductions without resistance.

The Charles Boldt Paper Mills Company of Cincinnati, Ohio, has just completed a $1,000,000 plant at New Iberia, Louisiana, for the manufacture of paper board from rice straw. The product will be sold in rolls of 1400 pounds to box manufacturers.

The paper hat for women who like to change the style of their headgear frequently has reached Chicago from Paris to be studied. It will be tested by Gage Bros. who are contemplating ordering a supply of them with a view to bringing down the high cost of millinery. The sample which has been received seems to dispel all doubts entertained by milliners, who when they thought of paper hats saw visions of three-cornered contrivances constructed out of newspapers for the pacification of troublesome children. But the Parisian hat is so well contrived that it scarcely can be distinguished from those of straw and cloth. It is claimed that the paper chapeaux can be made to sell for such a low price that women will go shopping for a new one every week or two.

No progress was made of efforts to settle the strike of 40,000 paper workers in the United State and Canada at conferences held all last week at Albany, N.Y. between representatives of the unions and manufacturers. Adjournment was taken last Friday after it was found impossible to get laborers employed in the paper mills to accept a reduction in the present 54 cents an hour scale. Wood choppers, wood pilers and truckmen come under the head of common labor, and their representatives controlled the union delegates. The representatives of the companies said that 54 cents an hour was out of proportion to the scale paid to skilled men, such as machinists, who get 66 cents an hour. It is understood that the companies would have agreed to a continuance of the eight-hour day, but refused to continue the conferences when they could get no compromise on the common labor wage scale. Officers of the union were authorized to reopen negotiations with the companies, which may be done this week.

About 300 paper mill men from all parts of the country attended the annual convention of the American Pulp and Paper Mill Superintendents' Association at the Waldorf-Astoria Hotel, New York last Friday and Saturday. F. C. Boyce, of Wausau, Wis., president of the association, predicted in his annual address that peace is near in the paper and pulp industry. "The two great problems that confront the paper industry," said Mr. Boyce, "are wood for the manufacture of paper and labor. The mills are stocked with high-priced wood. The labor problem has not been entirely adjusted but I am sure that when the employes realize that there must be a wage readjustment this will all straighten itself out." Delegates maintained that wage readjustments must be made if the industry was to avoid receiverships.

Sidney D. Wells, who has charge of the United States Products Laboratory, at Madison, Wis., spoke to the paper mill superintendents, saying that he expects soon to bring down to a commercial basis a process for bleaching Southern pine pulp to permit of its use in high grade papers. At present the Southern product is used mainly for brown kraft paper. When this process will be utilized, Mr. Wells said, a great quantity of pulp from other sections of the country can be turned to the manufacture of newsprint. Southern pine grows two or three times faster than the Northern tree, he said, so that with proper reforestation a great increase in the pulp supply will be available. No more than 33 per cent of the forests East of the Rockies are available for pulp now, and from this 87 per cent of the entire supply must come.

Announcement was made at the superintendents' convention that the International Paper Company had just laid before its employees a proposed wage schedule and open shop agreement by which it is intended to stand in the settlement of wage troubles. The company's plants have been idle since May 1, when the workers went on strike in the walkout affecting about a score of large manufacturing establishments in the United States and Canada. Attempts at arbitration having failed, the company offers the same pay rates as were effective in 1919, with some exceptions, and proposes methods of settlement of future disputes. Operation of the mills would be resumed, it was stated, as soon as enough employes report for work. The company offers to take back former employes without prejudice, provided they have not been convicted of offences against the company during the strike. It declares for an eight hour day, "mutual bargaining between the company and its employees," and will permit employees to belong to labor unions.

Technical Section

A-1. Paper from Veneer Waste. Chem. Met. Eng., xxiii, 1080 (Dec. 1, 1920). From **Technical Notes,** Forest Products Laboratory, Madison, Wis. Raw material suitable for the manufacture of high grades of paper is found in wood wastes from veneer factories. The cores of many kinds of veneer logs, now used in large part for fuel, would make excellent pulpwood. In addition, a large part of the clippings and small veneer waste probably could be turned into pulp stock with profit. Among the veneer woods whose waste has papermaking possibilities are red gum, yellow poplar, cottonwood, birch, tupelo, basswood and beech. A.P.-C.

A-3. Cryptogamous and Aquatic Plants for Papermaking. CH. GROUD. **Papier,** xxiii, 259-63 (Nov. 1920). A description of various cryptogamous and aquatic plants from the point of view of their utilization for papermaking. The Pisan marshes contain a large variety of plants, the ensemble of which is known locally as "falasco." Part of it is used for the manufacture of mats, cordage, baskets, wicker work, etc. Experiments were carried out on several of the species to determine the yields of pulp. The plants were cut, cooked with 6 per cent caustic soda under three atmospheres pressure for three hours, washed, bleached with 10 per cent of bleaching powder, pressed and dried. The following yields were obtained: Carex paludesa, 43 per cent; Phragmites communis, 47.5 per cent; scirpus lacustris, 45.5; Thypha ang stifolia, 44 per cent; Cyperus longus, 25 per cent. The bleaching of the fibres by sulphur dioxide and by potassium permanganate was no more satisfactory than with bleaching powder. The species which predominate in "falasco" yield long regular fibers, which could be easily utilized.—A.P.-C.

A-6. Gas Analysis by Absorption and Titration. R. S. TOUR. **Chem. Met. Eng.,** xxiii, 1104-6 (Dec. 8, 1920). Description of a gas volume compensometer for measuring residual gas volume in the method of gas analysis by absorption and titration, and of a nomography, or alignment chart, for simplifying the calculations of results.—A.P.-C.

A-12. Technical Casein. J. Ind. & Eng. Chem., xii, 1162-73 (Dec. 1920). **I. Introduction,** W.. MANSFIELD CLARK. A description of the purpose and scope of the investigation. **II. Grain-curd casein.** W. MANSFIELD CLARK, H. F. ZOLLNER, A. O. BAHLBERG, and A. C. WEIMAR. To meet the demand for the high grade of commercial casein required for the manufacture of glue to be used in the construction of aircraft, a controlled method of manufacture was devised and put into large-scale operation. This method was based primarily upon the properties of casein as an amphoteric electrolyte, the chief control being exercised through the control of the positive hydrogen on concentration at which the casein is precipitated and at which the casein is washed. The casein so produced met the requirements of the government specifications, gave promise of being suitable for the manufacture of high-grade glue, and possessed uniformity in physical characteristics which doubtless would have eliminated the necessity for troublesome changes in glue formulas. An outline of the theoretical aspects, details of manufacture, and studies of the effects of washing and exposures to atmospheres of different moisture contents are reported. **III. Methods of analysis.** ROSCOE H. SHAW. A critical survey of the methods of determining moisture, ash, fat, sugar, phosphorus, and lime. For reliable results for moisture, the standard method of drying to constant weight in a partial vacuum at the temperature of boiling water should be used. In the case of low ash caseins an added base is required if accurate results are to be obtained. This is not necessary in medium—and high—ash caseins. This is due to the low lime content of low-ash caseins which results in loss of phosphorus, the amount of less depending on the temperature of ignition. The results obtained by extracting the fat with ether depend on the degree of fineness of the sample, as the grains of casein are hard and not easily penetrated by the solvent. A modification of the Roese-Gottlieb method has been devised which gives accurate results because the sample is dissolved and consequently none of the fat escapes the action of the solvent. Sugar was determined by adapting the method for determining sugar in cattle food (method of Bryan, Given and Straughn, U.S. Dept of. Agriculture, Bureau of Chemistry, Circular lxxi, 1911). The finer the size of the casein granules, the greater the amount of sugar obtained. The most satisfactory method for the determination of phosphorus was the official method for determining total phosphorus in fertilizers, using method (a)2 for oxidizing and getting the casein into solution (see Official and Provisional Methods of Analysis, 1908, U.S. Dept. of Agriculture, Bureau of Chemistry, Bull. 107, revised). The determination of lime offers no difficulty as all of it is found in the ash after ignition. **IV. Standardization of the borax solubility tests for commercial caseins.** HARPER F. ZOLLER. The viscosity curve of casein borax solutions shows that the maximum viscosity if obtained at a H ion concentration of pH 8.15, while a pH of 8. 9-9.1 the viscosity is less but constant, owing to the buffer effect of borax in the region. The importance of conducting the borax test in this buffeted region is discussed. The great variation in the viscosity of casein solutions at different concentrations of casein is utilized in the physical test by choosing a concentration which will bring out the difference in physical constitution of casein prepared under safe and dangerous conditions of temperature. The viscosities of several caseins in borax solution are given to show that difference in physical structure of casein have greater influence upon their viscosity than the normal contaminating substances present in commercial casein. High-temperature caseins always exhibit a comparatively great initial viscosity. The revised method for the borax test is as follows: The casein is ground to pass a 40-mesh sieve: 15 g. of the casein are measured into a 250 Cc. beaker; 100 Cc. of 0.2M borax at 30° Cent. (76.32 g. of $Na_2B_4O_7.OH_2O$ diluted to 1 liter) are aded with vigorous stirring. This is allowed to stand for thirty minutes with thorough stirring at intervals of five minutes. During the first five minutes the mixture should be stirred rather frequently. A casein of known purity and conduct should be used as control until thorough familiarity with the method is gained. Usually the character of the casein shows up within the first ten minutes, but thirty minutes is advised for safety. Longer periods are unsatisfactory because of the improved casein-borax test includes low solution difficulty in interpretation. The essential changes in temperatures, reduced concentration of casein, and increased concentration of borax. These changes are based on purely physicochemical relationships. The value of the casein-borax test is defined as an accurate means of differentiating between low-and high-temperature caseins.—A.P.-C.

A-14. Measuring the Translucency and Opacity of Paper. RAYMOND FOURNIER. **Papier**, xxiii. 259-7 (Nov. 1920). In Klemm's apparatus for measuring the capacity of paper, the personal equation plays a great part. F. proposes a modification of this apparatus wherein the eye of the observer is replaced by a selenium plate (similar to those used in telephotography), which is connected to a source of current and to a galvanometer. By closing the circuit and noting the deflection of the galvanometer, first when there is no paper between the source of light and the selenium plate, and, second, when one or more sheets of the paper to be tested are interposed, the opacity of the latter can be easily and quickly determined.—A.P.-C.

A-14; 15. The Determination of Cellulose in Rubber Goods. S. W. EPSTEIN and R. C. MOORE. **India Rubber J.** xlix, No. 13, 21-8 (March 27,1920); **Chimie & Industrie,** iv, 660-1 (Nov. 1920). A sample weighing 0.5 Gm. is digested in a 250 Cc Flask with 25 Cc of freshly redistilled cresol (b.p. 198° Cent.) for four hours at 160 to 185°, cooled, diluted by the addition of 200 Cc of petroleum ether in small portions at a time with constant agitation. After separation of the layers, the liquid is filtered through a Gooch, washed five times with very hot benzene and one or twice with acetone. The residue in the flask is treated with hot 10 per cent hydrochloric acid and transferred to the Gooch. The addition of hydrochloric acid should be done cautiously to avoid loss of material in case carbonates are present. The residue in the Gooch is washed ten times with hydrochloric acid, then with boiling water until the wash waters no longer react acid, then with acetone until the washings are colorless; then with a mixture of equal parts of acetone and carbon disulphide until the filtrate is colorless; and finally with alcohol. The asbestos and precipitate are removed, dried, and weighed. The whole is digested for half an hour at 75° Cent. with 15 Cc of acetic anhydride and 0.5 Cc of concentrated sulphuric acid, cooled, diluted with 25 Cc of 90 percent acetic acid, filtered (without strong suction) on a tared Gooch, washed with 90 percent acetic acid until the filtrate is colorless, and then four times more; wash five times with acetone, dry for two hours at 150° Cent., cool, and weigh. The loss represents the amount of cellulose. The authors give numerous examples of results obtained with various classes of goods. The method is especially suited to the rapid determination of the tissue in waterproofed, rubberized, etc., fabrics. It is very accurate, especially in the case of regenerated rubbers. In mixtures containing wood, jute, cork and leather, it is preferable to digest for sixteen hours at 120° Cent. in cresol. By acetylation 95 percent of the wood, 90 percent of the jute, 21 percent of the cork, and 70 percent of the leather present is obtained.

The non-acetylated cork may be separated and considered as at 70 percent of that originally present. In the absence of wood, jute, and cord, leather can be determined approximately.—A. P.-C.

A-16. Acid-resisting Alloy. U. S. Patent No. 1,354,-988, assigned to FOSTER MILLIKEN, Lawrence, N.Y., S. FULLERTON WEAVER and JAMES M. REPPLIER as trustees Oct. 5, 1920. **Chem. Met. Eng.,** xxiii, 988 (Nov. 17, 1920). An alloy to resist high temperatures and the action of acids, alkalis, and chemical mixtures at high temperatures, consisting of copper, 50 to 60 per cent; nickel, 28 to 36 per cent; zinc, 4 to 8 per cent; and iron, 4 to 8 percent.—A. P.-C.

A-9. Active or Available Chlorine. J. R. MACMILLAN, **Chem. Met. Eng.,** xxiii, 1064 (Dec. 1, 1920). The term "active" or "available" chlorine is used to define the chlorine in bleaching powder which has oxidizing power, to distingush this from the chlorine which is present as chlorides or chlorates. It is the usual practice in routine analysis of bleaching powder to determine the active chlorine and also the total chlorine present. The difference in percentage between the active and total chlorine is called chloride chlorine or inert chlorine. When bleaching powder is dissolved the term "active" chlorine becomes somewhat a misnomer, as the active principle then is the oxygen in the calcium hypochlorite, the results, if this is understood, are expressed correctly either in terms of chlorine or of oxygen. The same is true when chlorine is absorbed in alkaline solutions or in milk of lime. If conditions as to temperature and distribution of gas are properly maintained, all the chlorine absorbed will be indicated by analysis to be "active," although only half of it will be present in the hypochlorite formed. Thus a pound of chlorine gas is equivalent to a pound of active chlorine in bleaching powder. If some of the chlorine present in the form of chloride can be removed from the solution, then it is possible to get an analytical result showing a higher percentage of "active" chlorine than the percentage of total chlorine present. This is possible because the oxidizing power of the solution is really what is determined, although it is expressed in terms of chlorine.—A.P.-C.

B-1. Disease of Spruce (Picea excelsa). Compt. rend.; Bull. Synd. Fab. Papier et Carton. xxiii, 362-3 (Dec. 15, 1920). Description of cankerous growth which was noted on young spruce (picea excelsa) in the forest of Barèges, about 1,500 to 1,700 meters above sea-level, and which appeared to have been due to the presence of cankered pines. The growths are of a bacterial nature.—A.P.-C.

B-9. Canada's Pulpwood Laws and Regulations. Chem. Met. Eng., xxiii, 1056 (Dec. 1, 1920). Brief extracts from the Quebec regulations concerning the cutting of timber on crown lands.—A.P.-C.

B-0. Sodium Fluoride as Wood Preservative. GEORGE M. HUNT. **Chem. Met. Eng.,** xxiii, 1123-4 (Dec. 8, 1920). A discussion of the relative merits of sodium fluoride and zinc chloride as wood preservatives, showing that the matter is practically one of price.—A. P.-C.

E-4. Gas-scrubbing Towers with Internal Packing. F. G. DONNAN and IRVINE MASSON. **J. Soc. Chem. Ind.,** xxxix, 236-41T (July 31, 1920). A mathematical discussion of the theory of gas-scrubbing towers with internal packing with a view to obtaining as simply as possible mathematical expressions which might serve

(Continued on page 622.)

PULP AND PAPER NEWS

Mr. Frank B. Holt, who has been at Grand'Mere since last October in connection with the installation of the Harland Patent Interlock Electric Drive on Laurentide's No. 8 and 9 machines has returned to England. Mr. Holt leaves many friends at Grand'Mere where he entered heartily into the activities of the community.

Mr. Harry Bates, who during the construction of the new Laurentide machines, was their representative engineer at the Dominion Engineering Works has returned to Grand'Mere. He is now connected with the welfare and employment work.

Recent visitors at Grand'Mere were Mr. T. Ramsen and J. White of the International Paper Company's new mill at Three Rivers.

The commencing exercises of the Laurentide night school were held recently and certificates presented to eleven young people who had made satisfactory records. Mr. Ellwood Wilson, Director of the school, presided and gave a brief talk on the development and advantages of the night school. Prizes were awarded for the best records and those who had an attendance record of 95 per cent or better received back half their tuition money as their reward.

A new club in the St. Maurice Baseball League is represented by the team of the International Paper Co. This league has been running for a number of years and has provided a lot of good healthy sport.

We notice that The Digester published by the Laurentide Co., is now including in its weekly isues a health bulletin which is provided by the Laurentide contract with the Metropolitan Life Insurance Co., for group insurance. This particular bulletin brings home to the workers the dangers due to the ordinary house fly. As it is printed in both French and English and forcefully illustrated, it should certainly be helpful and instructive.

The Vocational courses at Iroquois Falls have been completed and have been an unqualified success. The courses on Acid Making and Wood Technology were completed and the course on Groundwood is to be continued in the fall when additional courses such as Paper Making and Steam Plant Operation will be added to the list. One of the encouraging features of the work has been the attendance at lectures by men working in other departments.

From the personal column in the Broke Hustler it would appear that nearly everybody in Iroquois Falls has either just returned from a vacation, is contemplating one shortly, or is enjoying one at present.

The Associated Boards of Trade of Ontario will leave Sunday for a rather extensive trip through the Province. A number of pulp and paper plants are included in the itinerary. These are the Spanish River Pulp and Paper Mills at Sturgeon Falls, the Abitibi Mills at Iroqois Falls, the Mattagami at Smooth Rock Falls and the Spruce Falls Pulp and Paper Company's new mill at Kapuskasing.

The kids at Iroquois Falls will not have the usual conception of a policeman the small boy usually has. Chief Morbey has just sent the boys a bat, ball and an infield glove. In order to keep peace in the family he has also sent a bat and ball for indoor baseball to the girls. The children will no doubt realize now that they have a good friend in the chief.

The Spanish River News is getting out some very attractive issues of their interesting paper.

The Mead Sales Co., has been organized as an Ohio concern for the sale of all grades of paper except newsprint. The personnel will consist of the pulp department of the G.H. Mead Co., and that company will hereafter confine its activities to the sale of newsprint.

A recent visitor at the Spanish River Mills at the Sault was Mr. G. D. Kilmaster, who has just returned from Newcastle, New South Wales, where for the past eight years he has been the United States Consul.

Mr. George Bearce of the Newsprint Service Bureau, New York, was a recent visitor at the Sturgeon Falls and Soo mills of the Spanish River Pulp & Paper Mills.

The Spanish River News for May 28th pays special attention to the Woods Department. There are a number of interesting articles on phases of the lumbermen's life and some good illustrations.

Football and baseball have started in earnest with the Spanish River employees as we find notes of their activities at both the Soo and Espanola. We find also that lacrosse and cricket are not overlooked. There must be at least one Englishman on the cricket team as we notice the name of P. B. Wilson, which we take to represent the President of the Pulp and Paper Association.

According to the Digester, the new Laurentide machines are beginning to show what they can do. An average of practically 140 tons from the pair have been maintained for the three days reported upon in detail. We understand that the output has since been maintained at only slightly less than the estimated production.

Shawinigan Falls and Grand'Mere each sport two tennis teams. Shawinigan B team beat the Grand'Mere B's at the Falls while Grand'Mere A team was victorious on their home court.

Mr. B. Hart of the New York Times was a recent visitor of the Laurentide Co., at Grand'Mere.

Duncan B. MacDonald, C.A., aged 48, partner in the firm of Oscar Hudson & Co., died at the Western Hospital, Toronto, after a short illness from cancer. Born in Glengarry, Ont., for several years he was accountant with the Spanish River Pulp and Paper Mills. Nine years ago he came to Toronto.

FRASER COMPANIES RESUME WORK.

Edmunston, June 6.—All the pulp plants and lumber mills of the Fraser Companies, Limited, in New Brunswick and Quebec will be in operation at full capacity this week, according to an announcement by Donald Fraser. Orders of sufficient size, although at greatly reduced prices, have been obtained to warrant the starting of the machinery in full capacity.

The companies operate the new sulphite mill at Edmundston, N.B. and the former Dominion Pulp Company's plant at Chatham, N.B.

CANADA PAPERBOARD'S WAREHOUSE BURNED.

Fire of undetermined origin, Saturday night, destroyed several thousand bales of paper stock and a large warehouse owned by the Canadian Paperboard Company, Limited, corner of William and Seigneurs streets, Montreal. Although the blaze was of short duration, the flames were so fierce at the beginning that surrounding plants and residences were threatened with destruction. Prompt work by he firemen, however, confined the fire to the warehouse, which collapsed in a short time, portions of walls falling on electric wiring and causing vivid fireworks.

The fire was discovered by a night watchman of the plant, while on his round. When he opened the door of the warehouse the flames were sweeping through the place and he immediately turned in an alarm.

The flames were fanned against the manufacturing plant of the paperboard company across the lane, and also threatened the Ogilvie Floor Mills Company's plant.

Men were kept on the spot watering the ruins all night and throughout Sunday. The debris was cleared off William street and off Seigneurs street to allow the passing of the trams of the Guy street line.

D. F. ROBERTSON,
General Manager Canadian Paperboard Co.
(Photo, courtesy International News Service.)

An estimate of the loss was made at $50,000 for the building and $15,000 for the stock by David F. Robertson, general manager of the Canadian Paperboard Company, Limited, last night. Mr. Robertson stated that the stock of raw material would not interfere in any way with the continuance of their operations, as they had other factories at Frankford and Cambellford, Ontario, which can supply them. Plans will be made for an immediate reconstruction of the building. Mr. Robertson added that the firemen did excellent work in confining the fire to the warehouse, especially owing to the congested area in which it was situated.

REDUCTION IN NEWSPRINT PRICE.

It was stated this week by an official of the Canadian Export Paper Company, Limited, that a decrease in the price of newsprint to 4¾ cents per pound or $95 per ton, has been decided upon. The new price which will be effective for the quarter beginning July 1st, means a reduction of $15 per ton. The company handles the product of Price Brothers, Laurentide, St. Maurice, Belgo-Canadian and Brompton.

It is also understood that the George H. Mead Company, of Dayton, Ohio, has decided upon a similar reduction. The latter company handles the newsprint of the Spanish River and Abitibi mills.

ANOTHER PAPER MILL FOR MANITOBA.

Ottawa, June 2.—A pulp concession which has just ben granted by the Government to J. D. McArthur, of Winnipeg, is expected to obviate a recurrence of the dearth of newsprint supply in the prairie provinces.

The concession consists of 718 square miles of pulp and timber land east of and adjacent to Lake Winnipeg. Mr. McArthur is to construct a pulp and paper mill costing at least one million dollars, to be completed within three years. It is to have a capacity of one hundred tons a day. Not less than fifty per cent of the pulp is to be manufactured into paper at the mill. The balance may be disposed of otherwise, except that, if in the opinion of the Minister of the Interior, it is required for the domestic market in Manitoba, Saskatchewan and Alberta. If it is export will be banned.

The grant also involves timber apart from pulp wood. The concessionaire intends to start work as soon as possible and give employment to several hundred.

J. M. IMRIE FOR EDMONTON JOURNAL.

The Edmonton Journal announces the appointment of John M. Imrie as managing director of that newspaper in succession to the late M. R. Jennings; also the election to its board of directors of Charles R. Morrison and Arthur Yockney, who have been on the staff for many years as managing editor and business manager respectively. Mr. Imrie, whose appointment takes effect July 1, has had a wide experience in newspaper work. He was manager first of the Canadian Press Association and later of the Canadian Daily Newspaper Association. Recently he has been a member of the head office staff of William Southam and Sons, Limited, doing special work of an executive character for various newspapers that company is interested in.

G. R .GRAY CARRIES WIRELESS EQUIPMENT.

Built at a cost of $200,000, the tug G. R. Gray, with engines and boilers of the most modern type, and carrying wireless equipment, has been turned over to her owners, the Spanish River Pulp & Paper Company. The vessel, which is 151 feet over all, 24 feet beam, 14 feet moulded depth, was built by the Toronto Dry Dock Company. Captain T. I Ganley is in command of the tug, and at the "Soo" he will turn it over to Captain J. L. Ramsay.

The G. R. Gray is named after the manager of the wood department of the Spanish River Company. It will be used in towing pulpwood to the Company's mills.

Can you sleep standing up? Then tell the Secretary, at once, to reserve accommodation for you on the T. S. trip.

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as the preliminary basis for the experimental study of the factors which govern the design and operation of internally packed gas-scrubbing towers. The equations which are reduced show in a quantitative manner of how a high absorption efficiency depends on: (1) High interfacial area between gas and liquid. (2) High relative motion between gas and liquid (within limits). (3) High degree of turbulent motion in one or more phases. (4) Sufficient rate of flooding to secure the maximum drip effect.—A. P.-C.

E-4. Gas-Scrubbing Towers with Internal Packing. W. B. VAN ARSDEL. **Chem. Met. Eng.**, xxiii, 1115-6 (Dec. 8, 1920). (See also previous abstract). Attention is drawn to the similarity between internally packed gas-scrubbing towers and heat interchangers, and to the simplification in the mathematical treatment of the problem by the use of heat interchanger formulas.—A. P.-C.

H-4. Chemical Efficiency and Concentration of Caustic and Salt from Townsend Cells. ALBERT H. HOOKER, **Chem. Met. Eng.**, xxiii, 961-8 (Nov. 17, 1920). The Townsend cell installation of the Hooker Electrochemical Company, Niagara Falls, is briefly described, and nine charts are given and explained which illustrate (1) specific gravity and grams per liter of saturated NaCl—NaOH solutions (giving also Engel's and Winteler's values); (2) per cent by weight and grams per liter of saturated NaCl—NaOH solutions; (3) specific gravity at 20° Cent. and 100° Cent. of NaCl—NaOH solutions; (4) specific gravity of NaOH and NaCl—NaOH solutions; (5) specific gravity of NaCl solutions; (6) solubility of Cl in brine and water; (7) water and salt ratios to NaOH chemical efficiencies; (8) concentration of NaCl in NaOH solutions; (9) per cent NaCl and NaOH during concentration.—A.P.-C.

H-4. Fundamentals of the Electrolytic Diaphragm Cell. HUGH KELSEA MOORE, **Chem. Met. Eng.**, 1001-5 (Nov. 24, 1920); 1072-4 (Dec. 1, 1920); 1125-8 (Dec. 8, 1920). A discussion of the fundamental principles involved in the construction and operation of the unsubmerged diaphragm cell, as exemplified by the Allen-Moore cell, comprising a detailed study of brine composition and products resulting from its electrolytic decomposition in the cell, current decomposition and energy efficiencies, rate of flow, effect of washing diaphragm on voltage and current and decomposition efficiencies, importance of purifying the brine, causes of the variations in voltage in use, errors in the determination of current efficiencies and necessity of using average data, relation of brine concentration and temperature to voltage and amperage, cell lag and instant results, effect of small quantities of sodium sulphate in the salt fed to the cell on the carbon electrodes and on the production of chlorate in the cell; together with an appendix on the calculation of the decomposition voltage and the theoretical yield per ampre-hour of various elements, inorganic compounds, and organic compounds.—A.P.-C.

K-7. Determination of the Degree of Beating of Paper Pulp. ANON., **Papier**, xxiii, 255-6 (Nov. 1920). A description of the Schopper-Riegler apparatus for determining the degree of beating of pulp, and of the method of carrying out the test. A.P.-C.

K-12. New Type of Suction Box. Fr. patent no. 508,109, ERNEST LAMORT and MARCEL LAMORT, Grand-Duchy of Luxemburg. **Papeterie**, xlii, 1025-30 (Nov. 25, 1920). The suction-box is constituted by three rolls, two of which are tangent to the machine wire along their top elements, while the third is tangent to the other two. The latter is covered with rubber or the like, and travels at the same peripheral speed as the wire of the machine, thus driving the other two rolls at this same speed. The space between the three rolls and the wire constitutes the suction-box, the extremities of which are closed by a hydraulic joint of any known form. Just outside the deckle-straps are two endless rubber belts, each having a width at least equal to half the difference between the maximum and minimum widths of the sheet of paper that is to be made on the machine. The position of these belts is adjustable across the width of the machine, so that when the whole width of the machine is not being used they cover that part of the suction box which lies between the edge of the sheet and the edge of the wire. The advantages claimed for this style of suction-box are: as the rolls constituting the suction-box travel at the same speed as the wire there is no friction, and consequently there is less wear on the wire; the rubber belts do away with the use of plungers for adjusting the length of the suction-box to the width of the sheet being made.—A.P.-C.

K-12. The Pope Patent Paper Threader. Paper. xxvii 10 28-30 (Nov. 10, 1920). A detailed description of the patent (Dec. 4, 1917) which covers a device for automatically transferring (by means of air) the web of paper from the calenders to the reel, especially on fast machines.—A. P.-C.

K-12. Warner's Patent Consistency Regulator. Paper, xxvii, 10, 210 (Nov. 10, 1920). Brief description of a consistency regulator covered by U. S. Patent No. 1,225,086, May 8, 1917, and Can. patent No. 178,495, July 31, 1917.—A. P.-C.

K-12. Improvement to Driers. Fr. patent No. 507,-936, ERNEST FARRELL, England. **Papeterie**, xlii, 1073-7 Dec. 10, 1920). The patent covers a device for obviating the necessity of using fibrous packing material at the trunions of the drying cylinders. This is accomplished by using ball bearings at the end where the steam is admitted to the drier and roller bearings at the end where the water is evacuated, both ends being at the same time supported by ball and socket joints.—A. P.-C.

K-18. The Manufacture of Corrugated Paper Board. A. LAMBRETTE. **Papeterie**, xlii, 1014-8 (Nov. 25, 1920); 1058-65 (Dec. 10, 1920). A description of the equipment used for the manufacture of corrugated paper board.—A.P.-C.

L-4. Paper Barrels.—Fr. patent No. 506,383, MAXENCE ISNARD, France, (Isère), May 28, 1920. **Papier**, xxiii, 266 (Nov. 1920). A receptacle is made with its inside walls of the shape of the outside of the desired article, said walls being constituted by a fine wire gauze, or other material permeable to liquids. This receptacle is given a rapid rotary motion by its vertical axis, and one or more jets of paper pulp is directed horizontally against said receptacle. Owing to the combined action of centrifugal force and the pressure of the jet, the fibrous material is felted and thoroughly compacted. When a sufficient thickness of pulp has been deposited, the article thus prepared is removed and the top and bottom put in place. The shrinkage which occurs on drying firmly fixes the latter in place. A. P.-C.

L-5. Cellulose Acetates. J. O. ZDANOWICH, London, England. **J. Ind. & Eng. Chem.**, xii, 1173-4 (Dec. 1920). The author has devised a method of producing cellulose acetates (U.S. patent no. 1,347,801, July 27, 1920; Br. patent no. 139,232, Sept. 18, 1918) the characteristic feature of which consists in the substitution of organic acids, especially chloracetic acids, in the nascent state, for sulphuric acid by adding a halogen to the acetylating mixture.—A.P.-C.

L-7. Sewing or Basting Thread from Paper. Ger. patent No. 314,490. Vohwinkler Papieru. Salicyl-Pergamentpapier-Industrie, Vohwinkel, April 16, 1918. **J. Soc. Chem. Ind.**, 226A (March 31, 1920). Paper threads of suitable strength are impregnated with a mixture consisting of paraffin or stearine, linseed oil, mineral oil, and varnish, and afterwards drawn between corks to remove the excess.—A. P.-C.

L-7. Impregnation of Paper Thread or Fabric. Ger. patent No. 299,771, T. DITTMAN, Germany. **Chimie & Industrie**, iv, 234 (Aug. 1920). The impregnating medium consists of glue and of solutions or resins in water, prepared in the usual manner.—A. P.-C.

L-7. Aircraft Fabrics. Br. patent No. 142,615, 1919, VICKERS LTD., and Sir J. McKECHNIE, Westminster and A. RYAN, Oldham, Lancashire, July 7, 1920. **Chem. Met. Eng.**, xxiii, 587 (Sept. 22, 1920). A process for preparing impervious fabrics for airships consistin in treating a fabric of cotton or other fabric having cotton as its principal constituent by suitable chemical means to convert the cellulose partly or wholly into cellulose acetate, then treating with softening agents, such as triacetine or castor oil, and finally calendering. Any ordinary method of acetylation can be used. For example, the fabric is treated for several hours at a temperature below 50° Cent. with double its weight of a mixture consisting of 5 to 6 parts acetic anhydride, 4 to 5 parts glacial AcOH, and 1 part fused $ZnCl_2$. After treatment with the softening agent and calendering, the fabric may be coated with cellulose-acetate or like dope, and varnished.—A. P.-C.

L-7. Preventing Rusting of Metallic Threads of Reinforced Paper Thread. Ger patent No. 301,209. A. FUNKE, Germany. **Chimie & Industrie**, iv, 234 (Aug. 1920). The wire is covered with a waterproof substance or with strips of greased paper, and is then immediately surrounded by paper fibers.—A. P.-C.

L-7. Spinning, Washing, and Drying Viscose Thread. Br. patent No. 125,394, M. DENIS, Mons, Belgium, April 8, 1919. **J. Soc. Chem. Ind.**, xxxix, 103A (Feb. 16 1920). The viscose is fed through one of a pair of interchangeable filter boxes into a bent glass tube which delivers it to the squirting nozzle directed upwards. The coagulating liquid is contained in a vessel shaped like a test tube which can be adjusted vertically in any desired position to afford a suitable immersion of the nozzle in the bath. The coagulating liquid is continuously circulated through inlet and overflow pipes with flexible connections. The thread passes upwards out of the bath and is caught by hooks attached to an endless travelling metallic web, preferably of aluminum, on which it travels downwards in an inclined path. During its passage in contact with the web the thread is sprayed by various suitable liquids, e.g., a fixing and a washing liquid, which are collected in troughs arranged behind the wire-cloth support. At the bottom the thread is detached from the web by a jet of liquid directed through the latter in reverse direction and is passed through a drying chamber while supported by a similar web travelling upwards through a current of hot air.—A. P.-C.

L-7. Process for Softening Paper for Spinning. Paper Yarns, and Fabrics. Ger. patent No. 300,695, C. HASENBRING, Hamburg, Jan. 6, 1917. **J. Soc. Chem. Ind.**, xxxix, 103A (Feb. 16, 1920). The goods are treated with a relatively strong solution of calcium chloride and then rinsed in such a manner that the calcium chloride is not all rinsed out.—A. P.-C.

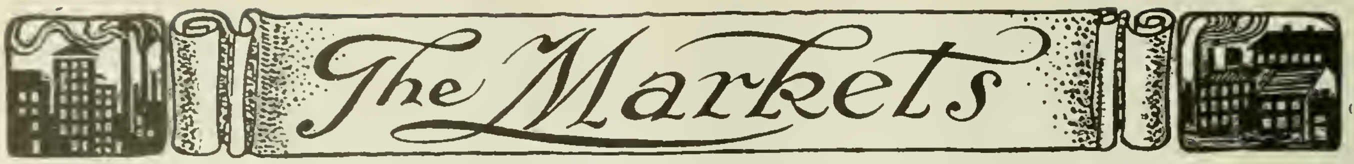
L-7. Process for Compacting Paper Yarn Fabrics. Ger. patent No. 301,361, F. RAWITSCHER, Berlin, May 3, 1917. **J. Soc. Chem. Ind.**, xxxix, 103A (Feb. 16, 1920). The finished fabric is subjected to a prolonged boiling treatment in order to convert its constituent yarns into a permanently swollen condition. —A. P.-C.

L-7. Dyeing Artificial Silk. LEONARD PHILIP WILSON and MARJORIE IMISON. **J. Soc. Chem. Ind.**, xxxix, 322-4 (Dec. 15, 1920). Only a limited number of direct cotton colors can be considered eminently suitable for use with viscose artificial silk from the point of view of giving even effects. The term "even" as appled to dyestuffs in this conection means the property of the dyestuff of giving an equal depth of color on artificial silk fibers of different affinities. A large number of dyes have been tested and, according to the degree of evenness which they show with fibers of known difference of affinities, when dyed under standard conditions, have been classified as "even," "moderately even," and "uneven." It has been found that evenness (at normal dyeing temperature, Cent.) varies inversely as the molecular weight of the dyestuff used; the arrangement of the groups in the molecule and their nature have, apparently, no real effect. Most basic colors can be made to give shades which show no signs of unevenness when used to dye artificial silks of very different affinities. In the case of mordanting with tannic acid and tartar emetic, the most even results are to be obtained by dyeing first in neutral dyebath, and then fixing in tannic acid and tartar emetic.—A.P.-C.

M-4. Ball Bearings in Paper Mills. World's Paper Trade Review, Jan. 7, 1921, lxxv, 1, p. 50. An article giving detailed description of the important advantages derived from using ball bearings on any type of machinery.—A. C.

M-0. Weir Measurement of Liquids. L. G. CHASE. **Chem. Met. Eng.**, xxiii, 1224-6 (Dec. 22, 1920). Brief discussion of the importance of weirs for measuring corrosive liquids and of the formula for the V-notch of weir, together with a description of the Lea recorder, which is a commercial type of V-notch meter. A. P.-C.

N-7. Utilization of Hydraulic Power in France. J. MICOL DE PORTEMONT. **Papier**, xxiii, 252-5 (Nov. 1920). A brief description of the very great progress accomplished in France during the last five years in the utilization of its hydraulic power. The various projects for the utilization of the Rhone as a source of power are briefly described, together with the construction of the hydro-electric power station of the Société Hydro-Electrique de Lyon at the Val-de-Fier. Mr. Bergeon, Director of the French School of Papermaking has perfected a system of electrically heated boilers. These have been constructed and installed at the Papeteries H. Freydet & Cie., Brignoud, Isère. They have a capacity of 5,000 hp., using 3-phase current at 6,500 volts, and giving steam under a pressure of 6kg. (about 80lb.), which is used in driers of four paper machines. The boilers actually use about 500-1,000 hp. during the daytime and 5,000 during the night. They can be brought up to the pressure in half an hour; but it is preferable to do so in three hours. —A.P.-C.



CANADIAN TRADE CONDITIONS.

Toronto, June 4.—Whether due to anticipatory action in connection with the printers' strike which is now in Toronto and other places, or to a general reductions in stocks the jobbers are unable to say, but most of them report a good month's business and one that nearly equalled the lighter months of the paper boom period. Undoubtedly there was freer buying by the printing trade in preparation of the strike for there has been a big output of the printers' product during the month and something like a run took place on the jobbers' stocks in an effort to get the printing jobs out before the men quit work. This had the effect of considerable movement in all lines of paper and this, added to what appears to be a stabilizing of prices has given a distinctly better tone to the paper market than has existed in some months. No one is making any predictions as to what may happen but there is a pretty general opinion that as far as paper goes, most of the lines have about reached rock bottom although there may be a few fluctuations in some lines. No further reductions are looked for for some time — if they come at all — in the standard lines, such as book paper, bonds, ledgers, writing papers, etc. and it will surprise a good many in the trade if there are any price recessions in the near future in any line now that the newsprint price for this third quarter is announced. The feeling of optimism is more than pronounced now than at any time since the slump set in, despite the possible effect of the printers' strike on sales, the idea prevailing that the printers will not be out for any lengthy period. As indicating that the jobbing trade is up and doing it may be mentioned that one of the big Toronto distributing firms is about to launch a big direct mail advertising campaign to boost made-in-Canada papers and pointing out that there is no printing job in Canada today, however high-class, that cannot be turned out on Canadian-made paper equal in finish and quality to any of the imported product.

PULP.—In connection with the pulp situation a big Toronto financial house points out that recent depression in domestic and export markets for all commodities has been reflected in some phases of the pulp situation also, particularly those grades of pulp and paper depending upon publishing and advertising for their markets. The general slowing up of business has reduced the volume of advertising as well as the circulation of periodicals and newspapers. It is pointed out, that throughout all this unsettled period, people must eat and wear something, making some business in staple commodities. This is reflected in the kraft pulp phase of the paper business. Kraft pulp is used in the manufacture of strong wrapping papers and shipping containers with the result that this phase of the pulp industry in Canada, although somewhat affected, has been more stable under the recent slowing up of business. The pendulum has swung past this lowest point and general, though perhaps not rapid, improvement is looked for in the kraft situation, which is a good barometer of general business. Some improvement in the pulp situation has been noted during the past ten days and while there have been comparatively few transactions the enquiries indicate that an era of better business is beginning to set in.

MANUFACTURED STATIONERY. — While the products of the manufactured stationery plants are being cautiously bought by jobbers and the consuming public there is a good demand for the standard lines and manufacturers are confident that the Fall will produce good business. Although there is a dullness in some lines the general tone of business is satisfactory considering the present state of the paper market and reports from the retail end of the trade indicate that while buying is light the business is in a fairly healthy condition.

RAG AND PAPER STOCKS. — Demand for new cotton cuttings continues limited, although enquiries from paper mills are slightly more active than a month ago. Very little actual business has been placed. In fact the purchasing agent of one of the largest concerns of new cotton cuttings states that he has bought practically nothing for the last few months except where cuttings have been offered at special prices, and even then only on very limited quantities. With the exception of roofing rags the market for old cotton rags remains dormant. There have been several fair sized orders placed for roofing stock during the past few days, and dealers who have been calling on roofing mills report that they are gradually becoming lower. They consider that some mills will endeavor to take advantage of the low prices before some of their competitors get into the market and try to cover before there is considerable buying. There is no doubt but that any strong buying movement by the mills will boost prices up a good deal above present levels as the collection of mixed rags is probably the lowest in the history of the industry.

PAPER STOCKS. — Newsblank, kraft cuttings and manila cuttings have been in good demand during the past few weeks, and there have been reports of orders taken at prices slightly larger than those quoted. Shavings are beginning to move in larger volume with in the quoted prices. Newspapers continue soft with very little demand from consuming sources. There have been numerous enquiries for fairly large tonnages of mixed papers and there is no doubt that any considerable buying by the mills will force prices up sharply. The larger packers appreciated the condition that the board mills are in and realize that it is difficult for them to pay high prices for mixed papers, and sell chip board at the present quotations. Nevertheless there has been so much paper destroyed that even the larger dealers are having trouble in filling any decent sized orders.

The following prices for rags and waste papers are reported:—

	Per Cwt. f.o.b. Toronto.
No. 1 shirt cuttings	$8.50— 9.00
No. 1 unbleached cotton cuttings	5.50— 6.00
No. 1 fancy shirt cuttings	6.00— 6.50
No. 1 blue overall cuttings	5.50— 6.00
Bleached shoe clip	7.50— 8.00
White cotton hosiery cuttings.	8.50— 9.00
Light colored hosiery cuttings	8.50— 9.00

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New Light flannellette cuttings	8.00— 8.25
No. 2 white shirt cuttings	5.50— 6.00
City thirds and blues (repacked)	1.30— 1.40
Flocks and satinettes	.70— .80
Tailor rags	.60— .65
Gunny bagging	.80— .90
Manila rope	2.75— 3.00
No. 1 white envelope cuttings	2.50— 3.00
No. 1 soft white shavings	2.25— 2.50
White blanks	1.40— 1.50
Heavy ledger stock	1.50— 1.75
No. 1 magazine	1.40— 1.50
No. 1 book stock	1.00— 1.20
No. 1 manila cuttings	1.50— 1.60
No. 1 print manila	.70— .80
Folded news	.50— .60
Over issue, news	.75— .90
Kraft	1.40— 1.50
No. 1 clean and mixed papers	.30— .40

NEW YORK MARKETS.

New York, June 4.—Fair activity has prevailed in the paper trade this week. Demand for all kinds of paper continues noticeably limited, yet all signs point to a gradual though slow revival of business, and certainly consumers in most instances are increasing the volume of their business to at least an extent. A majority of paper mills are securing enough business to keep them fairly welll engaged, and here and there are plants which are operating at very close to maximum capacity, while jobbers and mill agents with few exceptions report demand as showing some expansion.

Probably the most encouraging feature of the situation is that users of paper are beginning to regain confidence in prices. This is indicated by the marked increase in inquiry for the various kinds of paper and also by the gradual broadening of actual buying. While it is no more than to be expected that consumers are not absorbing normal quantities of paper in view of the situations existing in virtually every consuming trade, the fact that better buying interest is shown and that users are less inclined to hold off because of fear of a further sharp decline in prices is a healthy and encouraging sign.

Efforts are being made to settle the strike of newsprint and pulp mill workers. Conferences have been held this week and present indications point to an amicable agreement being reached within the next few days, thus bringing to an end the shutdown of this class of paper mills. It is understood that newsprint manufacturers have proposed that operatives return to work at 75 per cent. of their wages when they went on strike, with an agreement that the difference to be decided on by an arbitration committee will be paid when a decision is rendered. The International Paper Company, which has not joined in the conferences with union leaders by other manufacturers, has made a flat offer of taking the strikers back at 21 per cent. reduction in wages, and it looks as though the mill workers will accept this offer. Fortunately, the strike of newsprint and pulp milll operatives is about the only labor disturbance of any moment now affecting the industry, and a settlement of this controversy would undoubtedly go far in helping to stabilize not only that part of the industry immediately concerned by the strike but the entire industry.

Reports that have reached New York this week having their origin in Montreal are to the effect that a further reduction in the contract basis on newsprint is being contemplated by manufacturers. These reports say that on or about June 15 announcement will be made of a cut in newsprint prices to contract customers to 4.75 cents per pound or $95 a ton. In some quarters of the trade this reduction is not viewed in a favorable light but in others it is held to be the best thing for the industry in that it willl tend to stimulate demand and lead at least some publishers to anticipate their forward requirements and prompt them to discontinue their present hand-to-mouth buying policy.

The tone of the local newsprint market rules fairly firm. Demand has subsided slightly as a result evidently of expectations that the strike of mill workers is nearing a settlement and that available supplies therefore will become larger, yet there is a broader buying movement than there has been in recent months. Transient buyers are absorbing supplies in rather free fashion and are meeting the prices asked, which range between 5 and 6 cents per pound on roll news for spot shipment. The contract basis is maintained at between 5 and 5.50 cents, with the leading producer stilll quoting the higher figure. There are still occasional reports of "distress" lots of newsprint being sold at sharp concessions in price, but such transactions are becoming more of an exception than the rule.

No developments have arisen in the book paper situation. Most of the current business is against contracts at steady prices, and mills are taking orders from spot buyers now and then at price recessions simply to get the business although market quotations are maintained. Wrapping papers are moving in fair volume at a price basis of between 6.50 and 7 cents on No. 1 domestic kraft, while tissue papers are meeting with a comparatively good sale, coarse grades in particular.

Quotations on fine papers are unsettled. In fact, it is a hard matter to ascertain just what constitute market levels, as practically every manufacturer is naming

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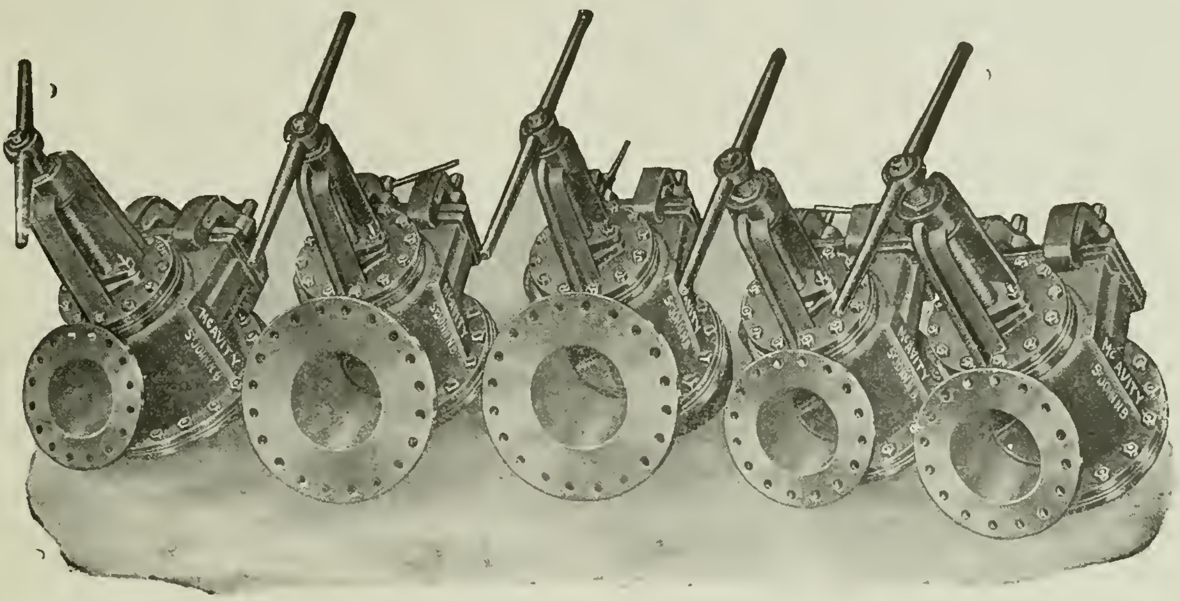

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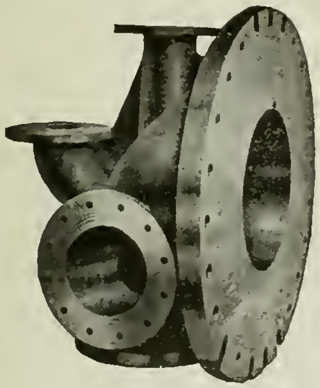

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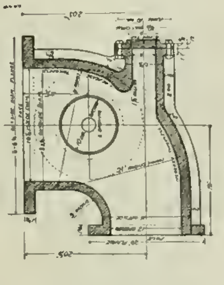

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a different price. There is only a routine demand for bonds and ledgers, and mills in general are in want of business.

The board market continues to improve. Board was the first to feel the depression in trade some months ago and apparently it is the first to show a revival of worthwhile proportions. Prices are not advancing but they are holding firm and evince an upward tendency. Boxmakers are absorbing larger supplies than in some time, and frankly acknowledge they are convinced board costs are down to as low a level as they expect them to reach. Plain chip board is quoted by mills at an average of $32.50 per ton at shipping points and filled news board at $37.50.

GROUND WOOD.—A steady undertone characterizes the ground wood market and although trading at present involves a smaller tonnage of pulp than in normal times, it can be said that the situation is showing more life than in a long period and that in the aggregate a fairly large amount of pulp is moving toward consumers. Moreover, all signs would seem to point to a large part of the surplus supply which existed at the time pulp mill workers went on strike a month ago has been removed, which fact obviously lends strength to the situation. Board mills are absorbing increased quantities of ground wood and there is considerably more buying interest displayed by other consumers. Prices range, on an average, at around $30 per ton f.o.b. grinding plants, with sales reported in some cases at higher than this level, and, on the other hand, in certain instances at lower figures, although it should be stated that manufacturers accepting less than $30 are situated at points where heavier freights oblige them to sell at such levels in order to compete with producers located nearer to consuming mills.

CHEMICAL PULP.—If anything, demand for chemical wood pulp has slowed up a bit this week. There is quite a good inquiry for several grades, notably easy bleaching sulphite and unbleached sulphite of news quality, but on the whole buyers have let down in their operations to an extent. Prices are unmistakably easy excepting possibly in the case of news sulphite, which holds steady at between 3.50 and 3.75 cents per pound at pulp mills. Reports have been received of sales of domestic bleached soda pulp at 5 cents a pound and of domestic bleached sulphite at close to the same figure, although average quotations on these grades range around 5.50 cents on the former and at about 5.75 cents on the latter. Domestic easy bleaching has sold at 4 cents a pound. Kraft shows little or no change, with domestic kraft quoted at about 3.50 cents and foreign kraft at a quarter of a cent higher.

RAGS.—Demand for roofing rags features the papermaking rag market and, judging from indications, the movement of this class of material toward mills is steadily increasing. Prices are firming, and sales have been recorded at slight advances, No. 1 satinets having sold at around 90 cents per hundred pounds at shipping points and No. 2 packing at 80 cents. Felt manufacturers are buying cautiously but they are nevertheless increasing the volume and number of their orders.

Other grades are in a quiet market position. Writing paper mills are doing little buying, and book and blotting papermakers are purchasing chiefly in minor amounts. New cuttings are largely neglected, with some grades practically unsaleable. Prices hold at about previously mentioned levels, with probabilities favoring buyers securing supplies in most quarters at recessions from the figures quoted.

PAPER STOCK. — Some grades of paper stock are in good demand and prices on such descriptions are gradually seeking higher levels. This applies particularly to old kraft paper, which consumers have sought with such freedom that quotations have been forced up close to 2 cents per pound at shipping points. Actual sales to mills at 1.85 cents have been recorded and most dealers now refuse to entertain offers under even money. White news cuttings also are firm and in fairly active call. It is doubtful whether purchases could be made at 1.50 cents a pound, as most dealers are asking at least 1.60 cents, and even at this basis offerings are slim. Soft white shavings are firmly quoted at around 2.35 cents f.o.b. New York for No. 1 packing, and old book stock is held for one cent a pound. Folded newspapers are fetching between 37½ and 40 cents per hundred at shipping points and No. 1 mixed papers 27½ to 30 cents.

OLD ROPE AND BAGGING.—Old manila rope is in moderate demand and is readily bringing 4 cents a pound at shipping points in sales to paper mills. Importations from Europe at New York recently have been a little larger but this seemingly has not affected buying, and there appears to be a ready outlet for practically all the supply offered. Old bagging remains dormant and is mainly nominal in value. Dealers offer No. 1 scrap bagging at 90 cents to $1 per hundred pounds and roofing bagging at 60 cents a hundred without attracting buyers.

JEALOUSY.

Jealousy in the Spanish River Company is downright foolishness. The policy of this Company is to promote men from within, provided those men have the ability, before a search is made elsewhere. This policy is carried out just as consistently as it is possible to carry it out. Superintendents and Managers must of necessity make the final decision as to who shall be promoted and who not. Individuals may have a very attractive but exaggerated conception of their own importance, but the way industry is organized to-day, individuals do not pass on themselves for promotion. That rests with the boss. If he says "go" we go, if he doesn't say a word we pitch in and hope for the next whack at the job. We don't sit down and blubber over our failure to rise when we thought we were the only ones to fill the bill.

There are men who get the idea into their heads that so-and-so is after their job. The somebody-after-my-job man worries himself sick and is supersensitive. Nobody wants your job so long as you can hold it down to the satisfaction of your superior. If you are not giving satisfaction you'll know it soon enough. The Spanish River Company is glad to have you working in the Mills or Woods. Enjoy yourself at your job. You spend the greater part of your waking hours on the job, and you must work to live, so you might as well have a good time while you're at it. Jealousy is devilish and in the industrial democracy which we are building, it has no more chance or place than the proverbial snowball in the warmer regions. Merit will win and nothing else.

(From the list of their term promotion and transfers in the same issue of the Spanish River News, from which the above is taken, one sees that the Company performs its promises.)

Experience teaches us what fools we have been, but it doesn't always prevent us from repeating.

Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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EDITORIAL

APPRECIATED IN ENGLAND.

The April number of the Paper Makers' Monthly Journal contains an extensive review of the first volume of the series on the Manufacture of Pulp and Paper which is a preparation under the auspices of the Pulp and Paper Industry of Canada and the United States. The review is by the well-known analysts, Sindall and Bacon. Besides this review there is a book notice which gives in considerable detail the topics covered in the four sections comprising Volume 1.

The reviewers have evidently had some experience in teaching from their recognition of the different problems that the committee has endeavored to meet in the treatment of the subjects dealt with. It is intimated in the review that the elements of the science dealt with in Volume 2 should be treated at considerable length and we are sure that our English friends will be highly pleased with the manner in which these subjects are handled. We are glad to note a recognition of the Committee's endeavor to provide a text which is sufficiently elementary for a man with meagre education to catch on and carry on a successful study of the fundamentals of his own industry.

Sindall and Bacon recognize a fundamental difficulty in Vocational Education for the man in the mill when they state "the trouble is that the years from 15 to 18 when boys have liberty from school are wasted, so that the man of 18 to 20 years of age has to begin again." What is thus true of the English boy is even more applicable to a great many of the pulp and paper mill employees in Canada and the United States. It is generally understood that for the most part the English lad is further advanced in school than a boy on this side of the same age. It is true that a boy of 15 should be well beyond the first section dealing with Arithmetic but there are doubtless comparatively few in our mills who have studied, much less mastered, the principles of the Elementary Applied Mathematics of this Textbook and most of them are not familiar at all with the principles of Physics nor do they understand how to read drawings. In this connection it is noticed that the reviewers apparently expect only the younger employees to take up this course of study. Perhaps the majority interested will be under 25 years of age but it is more than likely that the older employees, having come to realize what a serious handicap a lack of education is, will be eager to make up for the deficiency of their own school days by a diligent study of a text relating directly and particularly to their own work.

The statement is made that physics cannot be taught respects helpful, but it can hardly be said that chemis- without some knowledge of chemistry. Some knowledge of chemistry is certainly desirable, and in some try is a pre-requisite to the study of physics. It will be found that sufficient chemistry is introduced at the point acquired to provide any such information necessary for the understanding of the principles of physics under discussion and in such form as to be readily assimilated.

The reviewers mention that in the explanation of Boyle's law it is necessary to mention a number of gases. There is no chemistry involved whatever. The plain statement that these substances are gases is a physical proposition and does not involve even the mention of any chemical facts relating to them.

Our mention of this review is not intended in any way to reflect on it because the Committee will greatly appreciate the careful way in which the book has been examined. It is rather to point out some differences in circumstances between the situation in England and in America with regard to the preliminary education of the typical mill worker. There is also perhaps a slight lack of understanding of the problem of home study and correspondence instruction which are phases of the situation that have been particularly in the mind of the Committee and have been the principal guide in the preparation of the work. It is probably inevitable that one who sees for the first time a single volume divided into sections and paged accordingly may be somewhat prejudiced in favor of the customary manner of indexing. We venture to suggest that an actual test would show no appreciable difference in the time it takes to find a reference by one or the other method. The intimation is correct that the convenience for other reasons of having each subject dealt with in a separate section is the principal point. Sindall and Bacon apparently recognize the necessity of providing this fundamental information for the proper study and understanding of such a later feature of the work as the making of sulphite liquor and other manufacturing processes. We shall await with interest the opinion of these reviewers when they receive the second volume which should now be on its way.

Orders for the set of five volumes may be sent to the Pulp and Paper Magazine (appointed to represent the Canadian Pulp and Paper Association) accompanied by $10 in payment for the first two volumes.

Accidents don't happen; they are caused.

THE U. S. TIMBER TARIFF.

It is feared in some quarters that the tariff recently adopted by the United States which provides for duty on lumber and $1.00 per thousand board feet on saw logs of certain species imported into the United States from Canada will have a serious effect on Canadian Industries. There are some people also who seem to think that this tariff is a direct attack on certain Canadian industries. This last assumption is most easily dealt with since a little reflection will show that most tariff measures come as the result of campaign pledges made prior to presidential elections. The Republican party and Republican platforms have always stood for the protection of American industries by means of the tariff. It is always to be expected therefore that a Republican victory at the polls will bring about an upward revision of import duties.

We feel that while there may be a temporary lull in exports of Canadian timber and lumber across the border this condition will not last very long because there is not sufficient timber available in many parts of the United States to supply the demand. It is entirely likely, as we see it, that the effect of the new tariff will be increased prices for American lumber and increased prices on stumpage by those who hold timber and realize that a duty of 25% is really an increase of 25% in the potential value of their woodlands. It seems that this increased valuation and the chance for the lumberman to increase prices of his product will result for a while in greater demands on American standing timber and provide that much relief for Canadian forests. The result in Canada may be a slight reduction in lumber prices for quantities on hand and a consequent stimulus to building operations and a somewhat wider employment of labor as well as more and cheaper dwellings. Such a result would not be without its advantages and might even result in less drastic inroads on our forests. That would really be to Canada's advantage. Another possible result would be an earlier appreciation of the propriety of putting an export duty on pulpwood.

On the whole it looks as though Canada would get pretty nearly as much benefit from the American import duty on lumber as the United States and that the farmers who demanded a duty on Canadian grain will get a dose of their own medicine. As far as considering such action as being directed against Canadian industry our advice would be, "Forget it."

SCIENCE SAVES WASTE.

It is gratifying to note that the Canadian Manufacturers' Association at their recent convention in Quebec took official notice of the unfortunate failure of the Senate to appreciate the advantages of scientific research sufficiently to approve and pass the bill for a National Research Institute. One of the principal functions of such an institution is to point out ways of conserving the wastes from our various industries.

One source of waste is the bark and wood removed from the blocks in preparing pulpwood for conversion by chemical or mechanical processes into a material suitable for paper manufacture. This waste may run from 8 to 18 per cent., or even in some cases a higher percentage of the wood bought by the mill. In removing the bark particularly by the knife barkers, there is a considerable loss of solid wood. The loss of this material, which has to be paid for, is not only an economic waste but is even a community nuisance, the disposal of which generally entails an additional expense. It is frequently burned as a low grade fuel but if it happens to come from wood just out of the river or for other reasons practically saturated with moisture it must be pressed before it will burn. It is sometimes used for filling in swamps and the like but there is no particular financial return from such disposal. It may be run into the rivers but such a practice is likely to be objected to.

An experiment carried out not long ago at the Forest Products Laboratories in Montreal with the equipment provided at that institution for the investigation of problems connected with the Pulp and Paper Industry resulted in a product which has an economic value. The experimental beater which is equipped with a lava stone roll, was furnished with the wet barker waste obtained from a drum barker by taking a sample of the ordinary run of refuse. After refining this material for 1½ hours it was made into sheets and tested for a possible commercial use. The material in itself has considerable strength but shows shives, which, if the material had been refined in a large size beater would undoubtedly have been reduced to a fibrous condition and thus have increased the strength of the sheet. It is evident that this material could very well be used as a filler up to 25% or more in the manufacture of board. Waste from knife barkers would undoubtedly have a larger proportion of wood substance and therefore possess greater strength and permit a larger percentage of this otherwise waste material to be used in board manufacture.

A study of the power consumption in running the experimental beater indicates the requirements will be approximately 120 H.P. hours per ton of pulp refined in mill apparatus.

Since this material has but little fuel value and where not used as such its disposal is an unproductive expense and since it can be furnished to the beater without previous drying it certainly appears to be commercially feasible to refine barker wastes in a stone roll beater or other suitable equipment and produce a marketable product.

The mention of "other suitable equipment" was made intentionally because that intimates another factor which could and should be investigated in this connection. This is but an instance of the kind of work which could be carried on by the Pulp and Paper branch of the National Research Institute that would be to the advantage of the country.

Group Insurance in the Paper and Pulp Industry

By A. C. CAMPBELL.

The executives of a Canadian paper pulp concern Group Life Division, Metropolitan Life Insurance Co. wanted to do something for their people. They had studied and were pleased with the operation of Group Insurance in an American firm with which they were affiliated; Group Insurance would help create good will — an invaluable asset among employes when it became known that the firm would continue the pay envelope for a certain number of months to families on the death of wage earners. It would add to the firm's reputation for fair and liberal dealing among workers. It would provide much needed protection at low cost and without medical examination — obvious advantages from the standpoint of the insured individual. It would take care of total and permanent disability as well as death. It would do away with the "passing of the hat" in the plant. By increasing the amount of protection with the worker's years of employment, Group Insurance could be used to reward length of service.

But the executives of this concern had more than insurance in mind. They were interested in the development of a better community.

They were appalled when the parish priest, a man keenly alive to the well-being of his people, told them that 60 per cent of the babies in the community died before reaching three years of age. They understood just what this alarming death rate meant to the town. Anxiety, unhappiness and discontent are by-products of sickness and death. Men who worry over sick children at home do not do a good day's work. Men and women who can not make ends meet because of the heavy expense of sickness and burial lower the morale of a community.

They began to look around for means of improving conditions. They realized that while they could do much themselves, they needed other help in putting over their program. We were pleased when this well known paper pulp concern came to us for Group Insurance and thereby entered into a partnership with us for better industrial health, better living conditions, and a better community.

They secured a district nurse, a college graduate who had received her professional training in one of the finest hospitals in America She visited the homes of sick workers—our company provides visiting nursing service to those insured under a Group policy when the Group policyholder is within a Metropolitan nursing district — gave bedside care, carried out the doctor's orders and instructed the family in the care of the patient.

With the co-operation of the French priest and the English rector and the active encouragement of an extremely progressive pulp mill management, a health program was initiated.

Our health literature, written in French, was distributed regularly to employes and special consignments of posters and booklets in regard to the care of children were used in "L'Ecole Maternelle", the school for mothers founded by the nurse to cut down the high rate of infant mortality. A slide with a picture of the visiting nurse in the home was shown in the local moving picture house. The mill installed a wonderfully equipped first aid room and arranged for the care of dressings for injuries. The establishment of a milk station is under discussion. In all this work the form is consciously using Group Insurance with its collateral advantages of visiting nursing and the vast experience of our company in health propaganda to carry out their industrial relations and community betterment program.

What Group Life Insurance Is.

Group Insurance is life insurance taken out by the employer for the employee. The policy is issued to employers having fifty or more workers and may cover all employees, or all of any one class — for instance, the whole force of a construction company may be insured or simply the office force of the organization. An employer only can buy this kind of protection. The insurance may be under three general plans:

(1) a flat sum such as $1,000 to all employees;

(2) an amount equal to a year's salary, or a part thereof;

(3) an amount varying with length of service.

The last is considered the best method because it encourages stability in a working force and so brings bigger returns on a Group Life investment.

The minimum amount of protection obtainable under this plan is $500 and the maximum $5,000, the expense being met either by the employer or by the employer and employee on a joint payment plan, but when the premium is to be paid by both, seventy-five per cent. of the employees must accept the agreement. The greater proportion of employers carrying Group Life Insurance have seen fit to pay the entire cost of protection themselves.

Should an employee become totally disabled before sixty, he may draw the benefits which would otherwise be payable at death, except that the money is usually paid in installments instead of a lump sum.

In case a man leaves his job he has the right of converting his policy within thirty days to an individual policy with a physical examination.

The employee always names the beneficiary, and under no circumstances can the employer be nominated.

Group Insurance is sold at wholesale rates. It costs materially less than other insurance because it does not stand the expense of medical examination and eliminates much clerical work. Covering groups of, from fifty to fifty thousand people on a wholesale basis is necessarily a much less expensive proposition than carrying insurance on an individual basis.

Everyone insured under a Group policy receives a certificate which designates the amount of insurance, the beneficiary and the general features of the plan. The distribution of these certificates often becomes a great occasion in many plants.

When the American Writing Paper Company, which has initiated an extensive program of emergency treatment in hospitals, home visiting, nursing, safety work, and educational and recreational facilities for its force, gave Group Insurance to its 4,000 employes, the president of the Company, Mr. George A. Galliver, sent a special invitation to each worker and one adult woman member of his immediate family to attend a "Christmas meeting." "A pleasing surprise" was promised.

On Sunday, December 15, 1918, hundreds of men and women gathered in the three halls where meetings were scheduled at various hours. An orchestra opened the program and the audience joined in community singing, Mr. Galliver announced the object of the meeting and Mr. J. E. Kavanagh Third Vice-President of the Metropolitan Life, explained the benefits of Group Insurance. Needless to say all welcomed the gift of free insurance.

Better Industrial Conditions.

Insurance companies are consciously co-operating with progressive employers in their endeavors to better industrial conditions. Firms selling insurance are business organizations, first, last and always; but in handling Group Insurance they have learned that service which helps employers develop a program for improving conditions in industry is good business.

Take the average manufacturer, whether his business is large or small, safety engineering, the hiring, training and retention of men, wages, hours, profit sharing, industrial government and medical aid are but a few of the human relationship problems that come to an executive's desk through the year. It would take a hydraheaded individual or a large staff of experts to handle such problems adequately. Through their contacts with many employers in different industries, companies selling Group Insurance have an opportunity given no other organization to gather and distribute industrial information.

The Metropolitan, in conducting its Group business takes this view-point — when an employer buys Group Insurance he is strengthening his industrial relations program, by recognizing that his men have needs—i.e., protection, which he can procure under more favorable circumstances than the men themselves, and he accepts his responsibility as a leader and an industrial executive by helping them obtain these necessities. He realizes that death, sickness and unprovided old age with their concomitants of expense and anxiety affect his community, his industry, his shop. If he is to be an efficient manager he must face these emergencies. Group life, Group Health and Group Pensions answer his problems.

With the motive of the employer in mind our company endeavored to find out what service of equal advantage to employer, employee and insurance company could be offered to make Group Insurance more effective. Health propaganda became the solution of our problem. Better health means more working days and a bigger pay check to the employee, more production and less absenteeism for the employer and a lower death rate and fewer death claim checks for the insurance company.

A visiting nursing service wherever our company maintains a nursing district is at the disposal of Group certificate holders. The nurse goes to the homes of workers, gives bedside care, carries out the physician's orders and tells the family how to care for the patient. Many a sick or injured man has been saved time and wage loss by the expert care of a trained graduate nurse, who does her best to get him back on the job as soon as possible. The visiting nurse, particularly if she has vision, is often one of the leading social agents in her community. Clean up campaigns, organized warfare against epidemics, child welfare work, improved sanitation, better supplies of milk and water and many other public health activities are fostered by the nurse.

The distribution of health literature is another part of campaigns for the prevention and cure of disease. Metropolitan booklets, effectively illustrated, and simply written, have been prepared by experts, such pamphlets as "How to Live Long", "How to Be Happy and Well", "First Aid in the Home", "All About Milk", "The Child", "Food Facts" and the "Cook Book" carry the good health message to the home. Others on tuberculosis, smallpox, typhoid fever, and diphtheria are valuable in time of epidemics. As practically all of these have been printed in French, many paper pulp manufacturers have used them among their French Canadian employees.

Bureaus which aid employers in the solution of their industrial relations problems have been established by insurance companies. Questions involving employment, methods of training employees, means of determining and reducing labor turnover, employment forms, housing schemes, safety first work, profit sharing, organization of employees' associations, the installation of plant magazines, co-operative stores, and lunch rooms come to our bureau every week. Probably the scope of this work can best be shown by specific examples.

A paper pulp concern of approximately several thousand employees wanted to form a mutual benefit association; a plan was drawn up which secured a 98 per cent. membership in ten days. Ventilation in the digester room of another concern was greatly improved by the use of a method employed by a policyholder in the same business. Still another sent in accident reports and received suggestions for reduction of injuries. The accountant of a large mill who wished to install new office equipment and consolidate the filing system of his company could not visit New York to hire a high grade employee to take charge of the work. Our bureau put him in touch with an organization able to help him get in touch with the right man. Write-ups on Group Insurance were furnished many firms having house organs. Programs for the meetings of various technical organizations were sent interested policyholders.

Firms having a small force consider industrial service invaluable, for they cannot afford to maintain a staff of experts and their executives have little time for, but often interest in problems dealing with the human factor in industry. An employment system, consisting of an application blank, a quit slip, a daily employment blotter and monthly turnover analysis sheet was installed in a concern having about 200 employees. The management wanted to publish a house organ, so a dummy was drawn up for the first issue. They were interested in training their foremen and a study on the subject was sent them. The variety and the extent of the information policyholders call for, indicate that the service bureau maintained for employers will probably become the greatest and the best of exchanges of practical experiments on the human problems that confront industry.

Do Employees Appreciate Group Insurance?

Again and again employers and employees send us stories, letters or resolutions which exemplify the workingman's good opinion of Group Insurance. Shortly after one of our policyholders bought Group Life Insurance an old man who had worked for him fourteen years stepped up to him about two months after he had received a Group certificate.

"It's the best thing anybody ever did for me since I was a child", the old man said. "You know I haven't saved any money. Taking care of the children took everything I had. Now the wife and I are getting along and I tell you I've worried a good deal about not having anything to take care of her in case anything happened to me. But this insurance has settled my worries". The old man's happiness was so evident that he made his employer happy.

Mr. Fred Johnson of Kingsport, Tennessee, tells an incident which illustrates the appreciation some have for the work of nurses. Mr. Johnson was standing in line before the polls on election day when he heard a mountaineer discuss the illness of one of his children. As all workers in Kingsport are covered by Group Insurance, Mr. Johnson asked him whether he had called in the Metropolitan nurse.

"Yes", the mountaineer answered and then added reflectively, "Ain't them the loveliest gals you ever see!"

The widow of a deceased employee of a trust company wrote the firm her thanks for a check sent her; "Will you please accept my heartfelt thanks for your most liberal and generous consideration at the time of my husband's death! In acknowledging receipt of the check for $1,000, I want to say that I am most thankful that my husband was employed by the C.....Trust Company. I feel that I lack suitable words to express my gratitude and appreciation to the Company for their generosity".

Several hundred employees who had been called together by the president of the firm cheered him enthusiastically when he announced the company was giving them Group Insurance. "I have been with this concern twenty years, and seventeen as president," he said to me later with tears in his eyes. "This is the first time my men have ever cheered me. I want to tell you right now if Group Insurance never did another thing, it is worth what it cost". He felt kindly to his people, his heart was in the right place, but he never had a chance to express to them his real sentiments until Group Insurance gave him the opportunity.

The ever increasing number of firms purchasing Group Insurance is evidence of its worth. The American Writing Paper Company, the Belgo Canadian Pulp and Paper Company, the Brown Company of Berlin, N.H., the Brown Corporation of La Tuque, Canada, which was the first Canadian firm to buy Group Insurance, Finch, Pruyn & Co., the Howland Pulp & Paper Corporation, the Laurentide Company, The Mead Fibre Company, the Oswego Falls Pulp & Paper Company, The Spanish River Pulp and Paper Mills, and The Victoria Paper Mills Company are some of the important concerns in the paper business which have taken our Metropolitan Group policies.

A Good Investment.

A business man insures his buildings, his machinery, his business, himself. He protects his property against fire, theft, and the elements. He protects his family and his business associates from financial loss that necessarily comes at his death.

Today the insurance companies who protect the manufacturer, the merchant and the banker in times of necessity are marketing Group Life Insurance with collateral service as a means of furnishing common ground for worker and employee. This new form of insurance, which often brings with it the by-product of interest, co-operation and friendship tends to safeguard the employer from industrial ill will and misunderstanding, and wards off anxiety and debt from the employee.

The worker realizes that he is getting more than a weekly pays envelope; he appreciates the personal interest of the boss who gives him an estate of $1,000, who has a thought for his family, who gives him often what he cannot buy for himself.

Group Insurance helps to gain the confidence of the worker and so improves the morale of the organization. For this reason it always has a place in the industrial program of the employer who builds for tomorrow by establishing today sound permanent relations with his men.

STABILIZING THE PAPER INDUSTRY.

A Lesson for Those Who Will Learn.

The paper trade has been interested for a long time in the general standardizing of papers, that is, in theory; but so far it has remained for the American Writing Paper Company, the largest manufacturers of fine paper in the world, to put the theory into actual practice on a complete line.

Perhaps paper is not so easily standardized as machinery, or bricks, or loaves of bread, since it is a product that has long been considered as impossible to make of uniform quality. That is one of the reasons there are thousands of names of bonds, ledgers, and other papers on the market today.

Since the war, which has taught American business one important lesson — that a confusing mass of varied styles or grades of products is economically unsound, slows up the manufacturing process, and delays progress, the American Writing Paper Company, through its scientific laboratory, has especially devoted itself to studying how the reduction of the thousand and one brands of paper could be effected and yet at the same time the real needs of paper-buyers be met.

This the company has done by the simple but practical means of reorganizing its mill output. To put it more explicitly, it is manufacturing a standardized grade to take the place of odd grades which over-lapped and confused.

As a definite accomplishment it announces the standardization of seven Bond Papers of rag content, two Bond Papers of wood fibres, five Ledger Papers, four Writing Papers, four Linen Papers, five Cover Papers, nine Book Papers, four Offset Papers, five Bristol Boards, three Drawing Papers, two Mimeograph Papers, three Blue Print Base Papers, five Weddings and Papeteries, six Basic Specialties, one complete Announcement Line, and one complete line of Hand-fashioned Papers.

It is interesting to note that already the indorsement of this plan of standardization has been given by seven national organizations devoted to printing lithography, engraving, and stationery.

Agreeable to policies of Herbert Hoover, the matter of standardization is being worked out as far and fast as possible in all industries. The plan of the American Writing Paper Company has met with the approval of John F. Williams of the printing and paper department and Robert B. Wolf of the pulp and paper department of the department of commerce, both of whom were delighted in investigating to find that the matter of standardization and stabilization had reached to such an advanced point as manifested by the American Writing Paper Company.

It is the company's aim to build up, through leading merchants, a distributing system that will concentrate on the standardized lines.

In conclusion, the standardization of the lines will mean to the paper merchant that it will be easier for him to satisfy the need of customers and will at the same time facilitate the turnover of his stock.

To the printer, the lithographer or the stationer, this standardization means accessibility of supply and quick service as well as a faster turnover.

For the manufacturer, through the possibility of concentrating the raw material for long runs, and its purchase in large quantities at a lower cost, it will mean a greater uniformity for this product. Above all, it will mean more economical and efficient service to the consumer.

CHEMISTS OF THE EMPIRE TO MEET AT MONTREAL.

A great event in the history of organized chemistry in Canada will be the annual meeting of the Society of Chemical Industry which will be held at Montreal August 26th to the 31st. A tentative program with questionnaire has been sent to all members of the Society by Mr. C. R. Hazen, Honorary Chairman, 84 St. Antoine Street, Montreal, and replies should be sent to him as early as possible by all of those anticipating attendance at the meeting. From the following program it will be seen that every effort is being made to bring about an event that will be not only a pleasant memory but an instructive and valuable experience to those who do us the honor of coming from the old land. A very fine series of industrial visits has been planned, including Montreal, Shawinigan Falls, Ottawa, Toronto and Niagara Falls, and the addresses and technical papers are such as will surely set forth the accomplishments and opportunities connected with the industries in Canada dependent upon the application of chemistry to the processes involved. The committees in charge of entertainment are making some excellent arrangements and we are sure that they can count on the co-operation of any branches of our industry in the localities to be visited by the attending chemists.

Any persons interested in chemical industry who have not received notices from the Committee on arrangements may obtain information from Mr. Hazen who will be glad also to receive any suggestions regarding the development of the program. Incidently, this will be an appropriate and opportune time to make application for membership in the Society of Chemical Industry.

The tentative program follows:

NOTE. — Changes, if any, and additions to this program will be published at the Montreal Meeting.

CANADIAN PROGRAM.

From Montreal to Toronto the guests will be continuously cared for on sleeping cars. At Toronto accommodations will be arranged for at the University residences.

Friday and Saturday, August 26th-27th.—Reception Committee meets visitors.

Sunday, August 28th.—Golf — Motor trip around City and Island.

Monday, August 29th.—Morning, 10.00 a.m. Council meeting, McGill University; 11.00 a.m. Annual meeting, (a) Address of Welcome. (b) Reply. (c) General business of the Society.

Afternoon, 1.00 p.m.—Civic Reception and Lunch. 3.00 p.m.—Special visit to McDonald Agricultural College. Supper and Garden Party.

Tuesday, August 30th.—Morning, 10.30 a.m.—(a) Address. (b) Pulp and Paper Symposium (3 papers).

Afternoon, 1.00 p.m.—Luncheon at Windsor Hotel given by Montreal Section. 3.00 p.m.—Visits to various Industrial Plants.

Evening, 7.30 p.m.—Banquet, Windsor Hotel.

Wednesday, August 31st.—Morning, 10.00 a.m.—Special addresses and technical papers.

Afternoon, 1.00 p.m.—Luncheon at Windsor Hotel, given by Montreal Section. 3.00 p.m.—Special Convocation at McGill University. 4.00 p.m.—Trip down Lachine Rapids.

Evening, 11.55 p.m.—Leaving by night train to Shawinigan.

Thursday, September 1st.—Shawinigan. — Visits to Grand'Mere and Shawinigan Falls Industries, under the auspices of Shawinigan Falls Section, S.C.I.

Friday, September 2nd.—Ottawa — Visits and entertainment, under auspices of Ottawa Section.

Saturday, September 3rd.—Toronto. — Visits and entertainment, under auspices of Toronto Section.

Sunday, September 4th.—Toronto — Visits and entertainment, and by boat to Niagara Falls, under auspices of Toronto Section.

Monday, September 5th.—Niagara — Visits to industries on Canadian and American sides.

With regard to the probable expenses of members attending the annual meeting at Montreal and of those taking the Canadian Excursion, while costs depend upon the tastes of the individual members the following statement will serve to give roughly the necessary expenses:

PASSAGE FARES	
Montreal to Shawinigan and return	$ 6.85
Montreal to Toronto via Ottawa	13.45
Toronto to Niagara by boat	3.30
SLEEPING CAR FARES	
Montreal to Shawinigan	3.00
Shawinigan to Ottawa	3.30
Ottawa to Toronto	3.30
	$33.20

	Single	Double	
Hotel Montreal	$4.50	$7.50	
August 27 to 31st, 4 days			$18.00
Meals (2 meals per day)			8.00
Aug. 31 to Sept. 5th, 5 meals			8.00
			$34.00
Total Expense to U.S. Border			$67.20

T. A. P. P. I. TO HOLD JOINT FALL MEETING WITH SUPERINTENDENTS' ASSOCIATION.

It has been practically decided to hold the Fall meeting of T. A. P. P. I. at Washington and Philadelphia during the week ending October 22, 1921. This will be a joint meeting of T. A. P. P. I. and the American Pulp and Paper Mill Superintendents' Association. Arrangements at Washington will be in charge of Fred. A. Curtis, Paper Section, Bureau of Standards, while Grellet N. Collins, of Dill & Collins, will direct the program in behalf of T. A. P. P .I. at the Philadelphia end. The convention dates will probably be fixed for October 19, 20 and 21. The tentative arrangements provide for sessions for the reading of scientific papers at the Bureau of Standards on Wednesday, October 21, the opening day of meeting, to be followed by an inspection of the paper mill plant and laboratories of the Paper Section. On Thursday, October 22, inspection trips will be made to the Government Printing office, the Bureau of Engraving and the mills of the District of Columbia Paper Manufacturing Company, followed by a boat ride on the Potomac river, supper to be served on the boat. At midnight all will board Pullman cars for Philadelphia where Friday will be spent in mill visitations, the following plants being included in the itinerary: Dill & Collins Company, W. C. Hamilton & Sons, Inc., McDowell Paper Mills, Philadelphia Paper Company, Moore & White Company, Keystone Paper Mills Company. Mills in Delaware and New Jersey may also be visited, those convenient of access being the Jessup & Moore Company and Pusey-Jones Company, in Wilmington, and the dyeworks of the du Pont company in New Jersey, besides one or two mills there.

British Trade News

(From Our London Correspondent.)

London, June 1, 1921.—Lately the British paper mills have been immune from outbreaks of fire and millowners were beginning to congratulate themselves until the news arrived from Alloa, in Scotland, that 500 tons of esparto grass belonging to Messrs. J. A. Weir, Ltd., Forth Paper Mills, Kilbagie, had been destroyed. Fortunately the mill escaped damage. At the Springwell Paper Mills, in Jarrow, owned by Messrs. W. H. and A. Richardson, a motor garage was destroyed by fire and four motor lorries in it. The damage is estimated up to £6,000.

Messrs. Becker's Profits.

This week the annual meeting of Messrs. Becker & Co., Ltd., who make a specialty of Canadian pulps, will be held in London. I understand their accounts show a gross profit of £117,979. After allowing for certain charges, debenture interest, and trustees fees (£55,359) there remains £62,620, to which is added the balance (£13,917) brought forward, making £76,537 13s. 11d. As the conditions prevailing throughout the world are difficult, the directors propose to especially reserve £50,000 against stocks and shipments overlying and to pay a final dividend of 10 per cent, free of income tax, making 15 per cent for the year, carrying forward a balance of £16,537 13s. 11d.

The Anglo-Newfoundland Development Co., Ltd., state that their accounts to August 31st, 1920, show a profit, less depreciation, interest on loans, etc., of £165,559. After providing for debenture stock interest and sinking fund there remains a credit balance of £195,661, inclusive of £64,610 brought in.

The Star Paper Mill has declared an interim dividend of 18 cents (9d.) per share.

Strike and Depression Continues.

The situation in the coal mining industry is unaltered and the miners strike continues. As each week passes by one hears of a mill closing down and the latest to become affected are the Stoneywood Paper Works, of Messrs. Alexander Porie & Sons, Ltd., Aberdeen, owing to shortage of coal. As a matter of fact from an industrial point of view the position is becoming desperate and there are no signs of the strike ending. At Aberdeen, for instance, the dockers in the harbor struck work out of sympathy with the miners and refused to handle foreign coal, but a number of men from the Donside Paper Mill were got on board the "Athena" from Holland and transferred the coal, with which it was freighted, to the bunkers of the "Gyp," which had brought in 4,823 tons of groundwood from Halifax, N.S., for Messrs. Becker & Co., Ltd. The unemployment roll in paper mills is now a very depressing sight. Things are so bad one of the paper mills in the north of England had to give stores of coal from stock to help keep the local hospital going for the sick of the town.

Trading With Canada.

Addressing the shareholders of Wiggins, Teafe & Co. (1919), Ltd., Mr. P. W. Holden, the chairman, said the firm had increased and strengthened their sales organization, and extended their borders. Mr. Hay, their sales director, was at present visiting America and Canada, where he had been for the past four months. In Canada he had succeeded in reopening old accounts closed during the war and in opening new ones. In the States where the firm had hitherto failed to do any business at all, he had opened up business with a firm in New York which would undertake an agency and from whom they anticipated large orders. Mr. Holden then exclaimed: "As soon as the tide turns we shall run in on the flood; of that I have no fear." Wiggins, Teafe & Co. own several mills in the United Kingdom.

Death Removes old Papermakers.

The hand of death has passed over the British paper industry and removed Mr. Henry Hobday in his 84th year. He was making paper away back in the early fifties, just when groundwood was being introduced as a raw material. He spent most of his time in Kent and had a varied experience in several mills. Mr. Joe Singleton, for sometime a director of the Bury Papermaking Co., Ltd., has also died. He was a great man on aniline colors for the paper industry and was much respected.

The Newsprint Agitation.

The decision of the paper makers to try and get included in the Anti-Dumping regulations, papers from countries with debased rates of exchange is being vigorously opposed. Indeed there is now a general movement to try and get the Imperial Government to drop the Bill altogether, but the Prime Minister says it must go on. Sellers of foreign papers in London are much disturbed by the contention of the paper makers and meetings are now being held for and against the Bill..

Boiler Stoking.

Recently very great attention has been given to oil fuel and as time passes on one hears of more industries absorbing it in place of coal. There is no doubt oil fuel has come to stay in the United Kingdom, but we have not yet heard what the paper producers as a whole think of it though some are using it. Another important matter in mills, and one which Canadians may be interested in, is the fireman stoking the boilers and his methods. The question naturally arises: Have you a trained fireman? If he is not a trained man see that he is. There is no use giving a fireman a shovel and coal and telling him not to let the steam pressure down. Among other things he should know how to use the CO_2 recorder and get up steam on the smallest amount of coal. If the fireman is neglected there is a big coal bill; if he is trained under a system there will be a big saving in the boiler house, less black smoke, and less ashes to handle. In some of the English boiler houses the engineers have taken the fireman in hand and and educated him on the latest devices in saving coal, as well as showing him how to stoke a boiler. At first the tuition was somewhat resented, but the fireman is now well pleased with the results.

Cotton Seed Fibre in England.

Viscount Doneraile presided last week at the annual meeting of British Cotton Seed Products, Ltd., which has obtained a factory at Chatham, on the river Medway. The company has also acquired special rights for the "Segundo" cotton-seed defibering machine, and they now own the world's rights, except in U.S.A. With regard to the residual fibre, the directors say they see no reason to depart from the original estimate of its value and much evidence has come to light since the company was formed of considerable expansion in markets for this raw material for papermaking and other purposes.

The Pulp Market.

The coal strike is preventing any business being done. What with mills closed, or on half-time, and a poor demand for paper it must be expected that the pulp market is lifeless. Prices for chemical and groundwood pulps are easier, but still the papermaker will not venture on business negotiations. Some sellers are holding out hopes of good times when the strike is settled. Certainly the industrial outlook at the moment is none too grand and it will take the paper mills and the coal industry some time to recover the present set-back. Spot prices are about as follows:

Bleached sulphite, £35; easy bleaching, £26; sulphite newsprint quality, £23; unbleached soda, £25; and soda kraft, £22.

Groundwood (wet) is £7, and groundwood (dry), down to £13-15—£14.

During the month of May some good shipments of groundwood and chemical pulps were received from Canada.

Chemicals.

Owing to many of the pulp mills being closed down in Sweden, saltcake is not in request and can be reported at £7 10s. a ton. Throughout the industrial chemical markets there is very little business passing and papermaking materials are consequently easier for prompt transactions.

Suggestions in the Mill.

In some British mills workers are invited to make suggestions which will help the output, improve machinery, or help in economizing. I have heard of one small mill where 62 suggestions were sent in between June, 1918, and February, 1921, and out of these 25 were accepted, the rewards being from $1 to $20. One worker was so keen that he asked to be allowed to go back and specialize in two departments where the work was not on an economical basis. Permission was given and he eventually presented a report which proved most valuable to the millowners in achieving their long desired objects in the two departments concerned. It is another instance of what welfare work can do, if properly handled.

Empire Press of Canada.

Mr. Robert Donald, chairman of the Empire Press Union, has sent King George a copy of the book on the visit of the Imperial Press Conference in Canada. It is a fine record, including visits to pulp and paper mills. Lord Standfordham in acknowledging the book says: "The King is glad to have this interesting account of a great achievement, which must always be a notable landmark in the history of the Press, and notes with pleasure the feeling of happy comradeship that characterized the proceedings of the conference." The book contains 125 engravings and the reading matter runs to 300 large octavo pages. Certainly this trip amid Canadian industries has created a great impression.

WHY THE TECHNICAL SECTION IS.

If I have an orange, and give it to you, the orange is no longer mine. I must either replace it with another orange, or do without. If I had given you a half an orange, neither of us would have had a whole one.

If some man has developed an idea which solves a troublesome business problem, the idea is of real value —like the orange. If you are trying to solve a similar problem, that idea is likewise of real value TO YOU— like the orange.

That other man, with the idea you need, can give you the WHOLE idea and still KEEP THE WHOLE idea, too. He has lost nothing, and you have gained all.

—Efficiency Magazine.

HOW WE CAN MAKE OUR DOLLAR WORTH 100 CENTS.

"Got anything like that in stock?" asked a printer the other day, laying before the paper salesman a sheet of bond from the sample-book of a United States manufacturer.

"Certainly," answered the salesman promptly. "Here's practically the same thing." And he picked out a sample from his own book.

The printer held it to the light and looked it over carefully. Then he turned to the salesman.

"That's good stuff," was the comment. "No dirt, no pinholes, fine, even texture. . . . Do you know, he confessed, rather shamefacedly, "I didn't think Canada made as good bond as that. You can send me five reams. And," he added, "I'm going to pay more attention to Canadian-made stock hereafter."

A Canadian-made Paper for Every Purpose.

Printers are busy men. They have no time to go carefully over every jobber's sample-book that comes to their desks. That is probably the reason why Canadian printers sometimes appear to overlook the fact that, in high quality, color range and variety of choice, Canadian-made papers are fully equal to any of their foreign competitors.

Quick Service for Rush Jobs.

And they can be obtained on the spot. Rush jobs— and what printer doesn't know the customer who insists upon getting his work straight off?—demand quick service. The 'phone call, sample sheets rushed over from the dealer, the stock selected, and delivered within a few hours. That's possible when buying Canadian papers. Compare such service with the delays involved when stock is ordered from some manufacturer outside Canada.

Getting Ninety Cents' Worth of Goods for a Dollar's Worth of Work.

There are some commodities which must be imported —but paper is not one of them. And as long as Canadians decline to buy it here in Canada, the various raw materials which we **must** bring in from the outside will have to be paid for in depreciated dollars; dollars that mean a hundred cents' worth of work to Canadians but for which we get only from eighty to ninety cents' worth of goods—if we do our shopping south of the border.

The Kind of Paper you use Affects the Price you Pay for Clothes.

Your choice of paper affects the price you pay for clothes, for rent, for practically every article you use. The reason is simple enough when you stop to figure it out. Canadian dollars will not go back to par until we cease to import more than we export. As long as we get for our dollar only, say, ninety cents' worth of coal, of oil, of all commodities that **must** be imported, Canadians will be handicapped by higher manufacturing costs than our neighbors in the United States.

It's not a question of patriotism, but of sound, efficient business. Better business, lower manufacturing costs throughout Canada, mean more work for the printer. And printers can help to bring this about by buying, whenever possible, PAPER MADE IN CANADA.—Canadian Pulp and Paper Association.

A true diplomat can say something pleasant to a collector, even though he hopes never to see him again.

The Preparation and Use of Colloidal Rosin

By DR. J. H. FRYDLENDER.

(Translated and abstracted for the Pulp and Paper Magazine by A. Papineau-Couture from La Revue des Produits Chimiques, 24, 173-8, March 31, 1921.)

When Graham first studied the difference between colloids and crystalloids he considered the former as *classes of matter;* but more recent work carried on during the last decades has established that they are a *state of matter.* The Russian chemist von Weimarn succeeded in working out the general principles which enable us to bring all matter to the colloidal state. Even sodium chloride has been obtained as a colloid. The ratio of the surface to the mass, that is, the degree of dissociation or dispersion, of a given amount of matter, is a most important factor when considering the state of that matter; but until recently this has been practically disregarded.

There is a gradual transition in passing through the various degrees of dissociation of matter, starting with coarse-grained powders, then passing through powders of increasing fineness of grain, suspensions, slimes, colloids, molecular solutions, ionic solutions, and finally gaseous atoms. Approximate limits may be set for the sizes of the particles in these states by means of filters having different sizes of pores. We have first filter paper, the heavier grades of which hold back grains 0·001 mm. (1μ) in diameter. Next we have the ultra-filter composed of colloidion jellies which contain various proportions of nitrocellulose and the pores of which hold back particles of 0.001 to 0·00001 mm. (1μ to $0{\cdot}1\mu$). This is essentially the size of colloidal particles. Below 0·00001 mm. ($0{\cdot}01\mu$) we come to molecular and ionic solutions which exhibit osmotic pressure, but in which the solute cannot be separated by filtration, though it cannot pass through certain membranes which exhibit selective permeability.

The methods of preparing colloids can be classed under two general heads:

Colloidal Rosin.

1. DISPERSION METHODS, which include dispersion in an organic dispersion medium, cathode dispersion according to Bredig's method and by oscillatory discharges, and dispersion by means of heat.
2. CONDENSATION METHODS, which include chemical reactions (e.g., reduction of metallic salts in solution), electrochemical and photochemical reactions, and polymerization of molecules.

Most of these methods are suitable only for the production of colloidal solutions which have a very great commercial value. There is also the method depending on dispersion by mechanical force, which comes under the first head; but it has not yet been applied commercially, though it would be suitable for operating on an industrial scale.

As a result of an exhaustive investigation of the conditions under which matter could be dispersed to an extent hitherto unattained, a special mill has been devised by Plauson and Block and is being marketed by Emil Passburg, of Berlin, Germany, for the preparation of matter in a colloidal state. In it the material is ground in the presence of water, or other suitable liquid, in such proportions as to have a fluid mass. The grinding element must have a peripheral speed of not less than 2,000 meters a minute, and preferably of about 1,000 meters a second.

The inventors make claims as to the advantages resulting from the use of this method of preparing colloids in the working up of petroleum bearing sludges, the shale oil industry, the extraction of oils from press-cakes, the preparation of resins, the manufacture of colloidal fuel, and many other industries. We shall consider only the preparation and use of colloidal rosin, as this is the application most interesting to the readers of the Pulp and Paper Magazine.

Wilhelm Pollmann, Director of the Rohstoffs-Veredelungs-Gesselschaft m. b. H., at Hamburg, states that the high price of rosin is especially due to the use of volatile solvents, some of which is always lost during recovery. The present methods of preparation are also open to the following criticism, that the crude rosin is first dissolved in alcohol, which is then driven off to give a marketable product, which must again be dissolved when used.

By means of Plauson's process a good yield of purified rosin can be obtained without the use of volatile solvents, simply by emulsifying the crude rosin in water in the presence of only one to 2 per cent of solvent. The colloidal rosin can be used directly for soap-making, papermaking, the preparation of shoe polishes, floor waxes, etc. It is of a dark brown color, and it is either of a sirupy consistency (like water glass) or else it is liquid. The smallness of the particles make it very easily saponifiable, so that there is not much danger of having unsaponified matter left.

Rosin emulsions may be prepared containing as much as 60 per cent colloidal, which is more than can be done with ordinary rosin. Colloidal rosin can be prepared from crude native (German) rosin, and marketed for 6.75 marks a kilo, which is less than the current price for ordinary rosin.

Colloidal rosin is suitable for sizing paper: it increases the strength of wraping papers and at the same time decreases the cost of production.

All this is claimed by Pollmann, who is a director of the company which manufactures colloidal rosin. But there are two sides to every question; and colloidal rosin has not met with universal approval, even in Germany. The *Seifensieder-Zeitung*, in its supplement *Der Chemisch-technische* (No. 8, February 24, 1921), published an article by F. C. Krist, of which we reproduce extracts.

"Mr. Wilhelm Pollmann, director of the Rohstoffs-Veredelungs-Gesselschaft m. b. H., at Hamburg, has recently been spreading in various professional journals certain information concerning a product marketed by his company under the name of colloidal rosin. As such information is likely to deceive manufacturers who ask our advice, we consider it our duty to set the matter in its proper light.

"At my suggestion the *Seifensieder-zeitung* ordered directly from the above-mentioned company a fairly large sample of the rosin, which was subjected to a careful analysis.

"This product, which is credited with all sorts of mysterious and wonderful properties, was found to consist of:

58·64 per cent of water.

2·93 per cent of sodium oxide (Na_2O).

0·63 per cent of inorganic impurities (sand and earth).

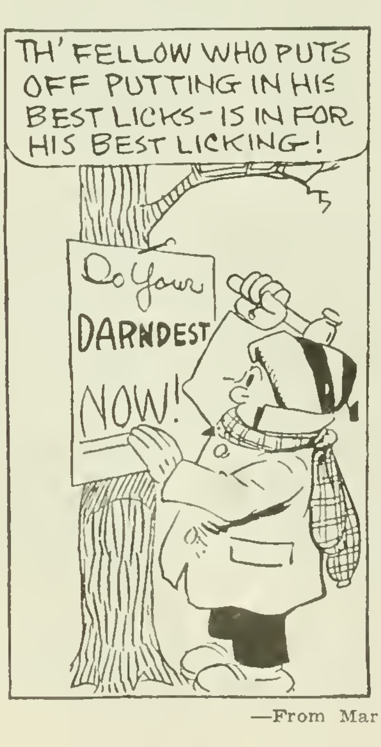
1·44 per cent of organic impurities, insoluble in alcohol. 36.35 per cent of crude rosin.

"After standing for a day, a large proportion of the rosin settles out of this dark, viscous, wretched looking material. It smells of turpentine, and it is evidently prepared (as shown by its analysis) by saponifying crude German rosin with soda ash or with caustic soda. All the impurities which render crude rosin unfit for many uses are still present. But though it is possible in certain cases to utilize crude rosin, after removal of some of the coarser impurities, such is not the case with "colloidal rosin," for the impurities have been partly changed chemically and partly reduced to the colloidal state, and are thus too intimately mixed with the acid rosin soap to allow of their separation.

"Moreover, the company asks (on the 20th of January of this year) 6·75 marks a kilo for this product, which is of doubtful quality. What it is selling at this price is really Elbe river water, and yet Mr. Pollmann emphasizes the special advantages of his product as regards transportation and cost. It is certain that Elbe river water sold in this way is too expensive for the chemical industries. But the most savoury part of the claims is the statement of this excellent business man to the effect that none of the valuable ingredients of the rosin have been lost. This is very true indeed. Nothing has been lost, even the dirt being utilized and improved by means of Elbe river water!

"The product is no more utilizable for soap making than for the manufacture of polishes; and its value for the sizing of paper is very limited."

The above criticism does not reflect on the value of Plauson's method in other instances; but it brings out a very important point, namely, the dispersion to a colloidal state of the impurities as well as of the valuable constituent of the crude material. Quite frequently the separation of the two can be readily effected, and in other cases, as with colloidal rosin, the separation is impossible or very difficult, so that the value of the final product is diminished accordingly.


TH' FELLOW WHO PUTS OFF PUTTING IN HIS BEST LICKS—IS IN FOR HIS BEST LICKING!
Do Your
DARNDEST
NOW!

—From Martin's Papyrus.

USE OF ESPARTO IN PAPER MAKING.

During the European war the scarcity of paper pulp in the Spanish market, caused by the difficulty in securing supplies from the sources formerly relied upon, especially the countries bordering upon the Baltic coast, caused Spanish paper makers to consider the use of esparto to supplement the import supply. Esparto grows throughout extensive districts in the south of Spain, and a poorer quality is found on large areas of poor and sandy lands in Algiers and Tunis. Esparto fiber has been used for centuries in Spain, and the manufacturers of matting, baskets, and cordage exclusively of esparto dates from the time of the Moorish occupation.

Early Experiments in the use of Esparto.

Esparto was used in paper making in Great Britain as early as 1857. The industry met decided success in Scotland and a few years later the manufacture was started in the south of France, the raw materials being obtained from Algiers and Tunis, but it has never reached a prosperous basis in the Republic, due to the inability to compete with the local straw papers. The industry in Spain in the regions bordering on the Mediterranean coast dates from 1869.

The greatest development of the esparto industry is still found in Great Britain, where the fiber has been used for making fine writing paper of great whiteness and to some extent for newsprint, though for the latter purpose at the prices usually current other pulps are cheaper. Papers made from esparto are of great thickness compared to the weight and have the advantage of not shrinking or breaking when exposed to moisture. They have especial adaptability for the manufacture of lithographs. They are easily filled, absorb ink well, and therefore are particularly adapted for fine printing, especially in color work. Esparto paper is highly esteemed for book making because of its texture and light weight.

Though esparto has exceptional qualities for certain uses in paper making, its fibres are not such as will allow its substitution for all the purposes for which pulp is used. The fibres are short and weak. The pulp is best used for filling, and is therefore employed largely in mixtures with longer and stronger fibres. Esparto is not suited for the manufacture of wrapping paper. It can, however, be used in larger proportions than has heretofore been the practice in most other grades, and thus make it possible for the Spanish manufacturers of paper to reduce their demands on the foreign market. In documentary papers and other in which great strength is needed not more than 20 per cent of esparto can be used. In writing papers, where light weight is desirable, esparto pulp can be used in large quantities.

For the cheaper grades, especially those in which incompletely bleached pulp is used, the higher price of esparto will, as a rule, make its substitution for bisulphite pulp impossible.—Commerce Report.

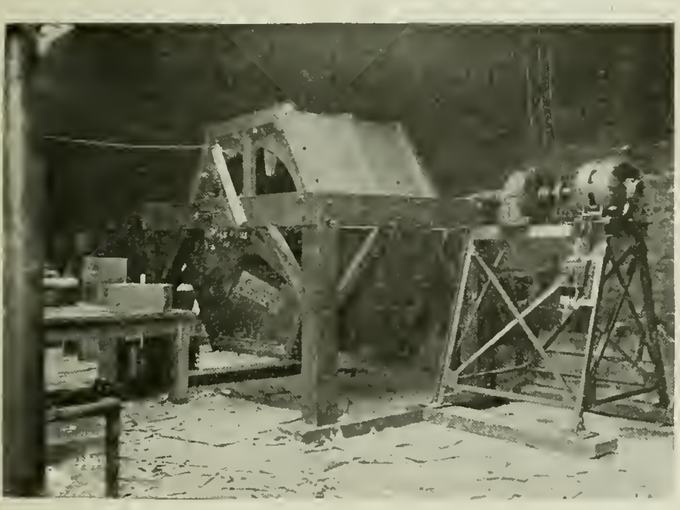
BIG TIMBER SALE IN NOVA SCOTIA.

The sale of 50,000 acres of timber land in Yarmouth and Digby counties by the Fraser Pulp and Paper Company of Scotia Timberland Company, Ltd., was announced recently by Ralph P. Bell, Halifax, who negociated the transaction. Mr. Bell did not state the exact price, but said that several hundred thousand dollars were involved in the sale. The timber tracts sold include all those formerly known as the Dickie & McGrath properties.

Fibre Containers Displacing Wooden Cases

The fiber contained is undoubtedly in process of displacing the wooden case for many uses. Its use has, of recent years, grown by leaps and bounds. What unquestionably led to its more general adoption, as a container for commercial commodities of the most varied kinds, in place of the wooden case was primarily the high cost of the latter, by reasons of the growing shortage of the lumber supply which necessitated that, where possible, a substitute for the wooden case should be used.

For some time, the fibre package naturally had to contend against a certain amount of prejudice and scepticism — that is, at first, usually the fate of inventions which subsequently come to be regarded as the commonplace conveniences of every-day life. In Canada, for example, the railroad companies were for a while, disinclined to accept such packages for transport. It was thought that their use would increase the risk from pilferings and the danger from moisture and so forth. There was also, probably, a lack of confidence as to their possession of the durability requisite to the uses for which many of them were destined. But the manufacturers of such packages were insistent. And, ultimately, the railroad companies agreed to accept them for transport, on condition that they should be of a certain strength and should conform to certain specifications.



A box-testing machine that gives a box more bumps an hour than it would get in going to England. It proved the value of the fibre box.

As regards the satisfactory qualities of fibre containers as commercial packages, as to durability and so forth, an account of a remarkably severe test, from which this kind of container emerged triumphant, was recently given in "The Paper Container", an English paper box journal. In the test in question, the freight consisted of 100 cases, each case containing 48 cans of Nestle's Condensed Swiss milk, and each of these cans containing 16 ounces of milk. The freight altogether traveled about 5,000 miles, by land and sea. The first stage of its journey consisted of some 1,000 miles of railroad transit, from Cass City, Michigan to Weehawken, New Jersey, whence it was conveyed by a lighter to the Cunard liner, "K. A. Victoria," which sailed from New York to Liverpool. On arrival at Liverpool, the cases were conveyed by rail to London, and forwarded to their various consignees.

With regard to the kind of container used, there were five varieties of the corrugated board cases of the centre special slotted carton type, the first being made with double-faced board having a resistance of 275 pounds to the square inch; the second set were what is known as the double wall or double strength corrugated board, glued together so as to make one piece, the case being fastened with a regular taped corner; the third set represented what is known as the strong box, of double-faced board, with a resistance of 200 lbs. to the square inch, which has an extra double 2-inch fold, giving a triple edge to the case, and ensuring that the contents would not touch the crease of the covering flaps; the fourth set of cases were of the double wall pattern, but with a triple taped corner; and the fifth set were of the 200 pounds test corrugated board, with 175 pounds test liner inside.

When these cases arrived at New York, and were stored in the hold of the "K. A. Victoria", they were all intact. But, on arrival at Liverpool, it was discovered that, for some unexplained reason, the cases had come in contact with a considerable amount of water. But, in spite of this unusual handicap, only three of the cases showed the slightest damage,—one case from the third set (the strong box) being saturated, while the other two damaged cases from the second and fourth sets respectively (the double walled box) had each the taped corner saturated. Altogether, out of the 4,800 cases of milk shipped in these 100 cases, only 48 cans had damaged labels, 38 of which were water-soaked, while there was no other damage of any kind to the cans. It has been stated by a representative of Nestle's firm that considerably more damage has been done to their cases, when shipped in wooden cases and subjected to severe saturation by water.

It would be difficult to obtain a more severe test of the strength of the fibre container than that just mentioned. But this is not the only advantage that the fibre container has over the wooden case. The gross weight of the container used in three of the sets (in the test just mentioned) was 50½ lbs, and of that used in the other two sets 51 lbs. On the other hand, the gross weight of the wooden box, usually employed for this shipment, is 54 lbs. Thus the fibre containers effects a saving in freight. Furthermore, the fibre containers occupied four cubic feet less space per 100 than the wooden cases—another advantage worth noting. Moreover, akin to this advantage is the further one that fibre containers are made in such a form that they can be stored in folded shape, when empty, thus effecting a considerable saving in freight space when they are being shipped.

The fact, too, that the fibre container can be printed at the time of its being made, thus rendering it of great value as an advertising medium, should be an additional incentive to its use in preference to the wooden case. It can be used as a package for commodities of almost every kind. In particular, there seems to be a great future for it as a container for oranges and grape fruit. It is estimated that these fruits can be shipped to the consumers two or three dozen to a package, at a cost of fifty per cent less than under the old system. Fibre containers used for this purpose are sealed and the fruit is pre-cooled and then packed in them. Among the advantages of this method are the high quality of the fruit due to its pre-cooling, considerably smaller cost to the consumer, and the fact that, being in small units, the packages are more attractive to the buying public; and will tend to cause the sale of oranges and grape fruit by the two or three dozen instead of by smaller quantities.

The fibre container business, and, in fact, the box business of all kinds, is wholly dependent on general trade conditions, and consequently the volume of trade done in these businesses affords a very fair index to the state of general trade. Now, comparatively few manufacturers order their containers far ahead. Hence the first signs of business revival are reflected in the boxes making situation. Consequently it is a good sign that manufacturers of fibre containers are now busying themselves with preparation for doing a big business, and there is reason to believe that, in the country, they will be able to put before prospective customers some very convincing figures.

THE PAPER PACKAGE SELLS GOODS.

A strong, light, cheap, container, easily handled, easily sold, each package containing a known quantity, as well as quality of contents,—a package that guarantees the consumer that it has not been tampered with since it left the manufacturer,—that is what the use of cartons is giving. But that is not all that it is giving. The cartons are printed with attractive designs, and call out, as it were, from the shelves, to the customer as he stands in the store.

The fierce competition in the United States is forcing the manufacturers and large packers to adopt every profitable aid to selling goods. One of the most effective of these aids is the use of attractively printed cartons, or can labels, bottle labels, etc., which are exploited in other forms of advertisement, so that the same device greets the eye on the shelves of the retail store as the customer has seen in newspaper and other forms of advertising. The statue of William Penn, which surmounts the City Hall of Philadelphia, is best known to a hundred million people as the trademark of Quaker Oats. They see the picture of this in the magazines, in the newspapers, on the billboards, and when they go to their groceries, William Penn himself with a royal charter in one hand, and a package of cereal in the other, smiles benignly down from the grocery shelves. It is an easily remembered device, easily recognized, and the trademark on the box reminds the reader of what has been read elsewhere, or said elsewhere, about the greater advantages of Quaker Oats any other kind of oatmeal.

The warm coffee tones of the Yuban coffee advertisement naturally suggest coffee, and their perfect harmony attracts the eye to read the advertisement. The same unusual colors on the grocer's shelves tie up with the advertisement and remind the customer of all those tempting suggestions which he has been reading. He is very apt to end by buying.

There is nothing like paper to keep your goods before the other man's attention, and the paper package, properly correlated with good advertising, does sell goods.—The Caravel.

The editor is anxious to be off on that great trip of the Technical Section. If the Garden City Press were not twenty miles from Montreal, where the bunch is gathering, there might not be any issue this week.

"TRIM"

The trim of a paper machine is a most important factor, both for the man who is buying paper and the organization which is making it for him. For the second, it has a close relation to production; and for the other, it may determine whether or not his order is accepted. Trim might be defined as the greatest width of merchantable paper which may be cut from the sheet as it leaves the last calender of the paper machine.

The slitters on the rewinder are the spout through which must be poured all the income producing product of a paper mill. If the spout is narrowed, in other words, if the greatest width possible is not trimmed, the production is decreased in proportion to the reduction in trim. Every inch across the machine costs the same to turn over, whether it is making paper or not. The lost inches increases the cost of the paper that is made; and the loss is paid directly from the margin or gross profit.

For this reason, there is an expressed or implied lower limit to the trim of every paper machine; and the order does not fit between this lower limit and the maximum trim possible must be returned to the customer. It is on this account, that a mill with three machines of varying widths is in a better position to care for all of a customer's wants than a mill with fewer machines. The orders which are sent to the machine must give the greatest trim possible of the best "fill".

Although there may be some variation in this lower limit the upper limit is not so flexible. It is determined at the time the machine itself is built and every care is taken that no mechanical trouble shall cut production from the edge of the sheet. When it is realized that it may be six hundred and fifty feet from the beginning of the sheet to the end of the machine and that this strip of paper more than one-tenth of a mile in length must draw true within a fraction of an inch, the difficulty of the task may be imagined. Including the wire, press rolls, dryers and calendar rolls there are about seventy-five bearing surfaces for the paper, and if one of them is a half inch out of line, it is likely to cut a half inch from the paper which may be trimmed.

There is a tendency to confuse the trim of a paper machine with the width of the machine as given by the maker. The width is measured across the roll and is the width of the wire on the fourdrinier. Most machines are listed in trade directories with this dimension and our Number Three machine, for instance, is given as a 136 inch machine, although it will only trim a little over 124 inches. This shrinkage is lost in three ways, the first being the four or five inches required by the deckle straps or dams which retain the stock on the wire. In the drying of the sheet there is a physical shrinkage which varies with conditions; but which cuts down the trim several inches, and a couple of inches must be cut from the sheet in trimming the rough edges.

The problem of fitting the sizes ordered to a machine was considerably simplified when the duplex sheet cutter was introduced. With the old single cutter, it was necessary that the trim be divided evenly by one dimension of the sheet. Now it is possible to work out better fills by reversing one or more of the sheets so that any combination of the two dimensions which fits the trim of the machine may be used. — The Raripaco Wrapping Paper.

QUOTA.

There is always something worth while in every House Organ, sometimes extra good. Here is one bit from "The Caravel," of the Parsons Trading Co., New York.

Quota—how many per—is a word we borrow from that practical, hard-headed folk, the old Romans. When they wanted to get all they could out of a proposition, all the traffic would bear, yet did not wish to kill the goose that lays the golden egg, they took a careful inventory of just what was what and how far they could go. They took a census of just how many people there were in each place, and who they were, and why they were there. Some of the original enumerations of those censuses have been dug up in recent years, and they show how keen the Roman government was on getting the exact facts. Then they governed accordingly. Not humanely by our standards but better than any of their predecessors, and better than any of their successors until the last few hundred years. They maintained the public credit, a fair degree of peace, and some justice.

Facts, carefully ascertained, classified and correlated, are the only basis for any successful large-scale operations. Conspicuous ability can raise splendid edifices, but can't maintain them without a solid, well-considered foundation.

There must be the facts, and they must be set out in their proper order. It reminds us of a theory that some modern theologians have. They call nothing a miracle that can be rationally explained; and say that when the twelve disciples enquired among the crowd hap-hazard, Who has any provisions? they found only one lad frank and generous enough to tell what he had. But when the Master had the people sit down in groups, and each group was asked, plenty was forthcoming. A man wouldn't have the nerve to pull out his lunch and not share it if his neighbor had heard him say he had nothing to eat. Whether these scholars are right or wrong, there is no question that a setting in order, and methodical examination, will often bring out unguessed resources and opportunities.

How paper can we sell this year? More if we plan for it than if we simply go it blind. Let's see; how much paper can our market buy? The government and other available trade statistics show how much paper, of each class, our market used last year, and the year before that, and so on back to 1910. These figures can be set out opposite each class, and in columns for the various years. At the head of each column, put the population for that year. After each of these columns, put in red ink the quantity of each class of paper per 1,000 of population. There won't be much fluctuation from year to year. We are talking of quantities, not values. There ought to be a steady growth. Now let's put down our own sales of these same classes in the same way. How is our proportion holding up? Are we really gaining? If we are, we can throw out our chest. If we are not, we can see what our quota is, and go to it.

The classified section of the telephone book or the city directory, or the local credit directory will enable us to go over possible customers trade by trade—and is there any trade that does not use paper? Even if they are too small to buy from us, they buy from somebody, and their suppliers ought to be our customers. And the number of them shows us how much those suppliers ought to buy.

The number of accountants and auditors in the directory roughly indicate the extent to which the manufacturing stationers must buy ledger papers.

The actuaries and insurance companies and banks need the best grades of ledger papers. Who supplies them? Are those suppliers our customers?

Are we selling our share of blue-print paper? Do the government offices, Public Works, etc., the architects, contractors, builders, machine builders use Grades 56690 or 56693?

They use drafting manila, tracing paper, tracing cloth, and other drawing papers, too. Their purchases are individually small, but large in the total.

In large cities the bakers use a considerable amount of paper, for pan linings and for wrapping their bread. This is a market for paraffined paper.

The bookbinders of course we have never forgotten. Maybe, though, we have forgotten some of the things we can furnish to them. Binders' boards, from genuine tar-boards down to straw-board; glue, thread; cloth; leather; stitching wire; machinery; ruling colors; marbling colors; gold leaf; marble-paper, etc.

Boot and Shoe factories use box-board, friction glazed, cheap white MF or poster for the flaps inside the boxes, and cheap white or manila tissue to pack in the boxes with the shoes.

Where does the local brewery get its filter paper? And its label paper, and bottle wrapping? And how much do they use?

And so we go on through the alphabet, little by little, not trying to do it all in one day, but jotting down opposite each trade the kinds and quantities of paper they buy.

And then we sell them.

It's not so simple as that. There is much more to the house than the foundation, but the foundation comes first.

We have the facts. We can set ourselves a mark that this month we will sell so many tons—or reams—of such and such a paper. That is our quota. Don't set it so high that there's no chance of making it. Nor so low that there's no fun in beating it. **Because of course we are going to beat it.**

MECHANICAL LEATHERS, LTD.

Mechanical Leathers, Ltd., of 126 Garden Avenue, Toronto, has been appointed Canadian representative of the Chicago Rawhide Manufacturing Company, and will deal in rawhide and krome flat, round and twist belting; belting laces, rawhide gears, pinions and blanks; cups, washers, frictions; mechanical leathers of every description; rawhide hammers, mallets and mauls; club bag and upholstery grains; and other rawhide and specially prepared leather products. The president of Mechanical Leathers, Ltd., which has been recently incorporated, is Mr. Richard W. Coleman, who has charge of the engineering and sales departments, and who was, until recently, with the Chicago Manufacturing Company as belt and sales engineer. Mr. Herbert R. Alley who, after distinguished overseas service, in the course of which he was severely wounded, was called to the bar, but, instead of practising law, joined the sales department of the Goodyear Tire and Rubber Company, of Canada (which concern he left last month, to form Mechanical Leathers, Ltd.) is secretary- treasurer.

THE PAPER INDUSTRY IS REPRESENTED AT WASHINGTON IN CONFERENCE WITH SECRETARY HERBERT HOOVER.

The American Paper and Pulp Association participated in a most important conference with Secretary of Commerce Herbert Hoover at Washington, when the cabinet member called what the newspaper writers termed a conference of the "best minds" of American industry.

The Association was represented by George W. Sisson, Jr., retiring president, W. J. Raybold, the new president, and Dr. Hugh P. Baker, executive secretary. The conference began in the afternoon, and the participants were then invited to dine with the secretary.

The conference was composed chiefly of representatives of industrial associations, and following the afternoon conference, a statement was drafted and signed by those present, for presentation to Secretary Hoover. The statement, made public at the request of Secretary Hoover, is given below.

Trade Associations' View of Department of Commerce.

Foreign governments, always related constructively to business, have, since the war, so expanded such activities as t omake it imperative, in the interests of American industry and commerce if they shall maintain their rightful place in world commerce, for the United States Government to end its assistance and encouragement in a more effective way than heretofore.

The representatives of commerce and industry, who met at your request today, feel that the Department of Commerce can be made to render, to the interests it is supposed to foster and develop, additional aid in keeping pace with their expanding needs.

We therefore welcome the opportunity offered by your suggestion that American business should state itself the character of service which your Department should render and submit the following for your consideration.

Congress had in mind the creation of a broad and effective department, one rivalling the aggressive efficiency of similar departments of competing nations, for in its definition of duties it provided that:

"It shall be the province and duty of said department to foster, promote and develop the foreign and domestic commerce, the mining, manufacturing, shipping and fishery industries of the United States; and to this end it shall be vested with jurisdiction and control of the departments, bureaus, offices and branches of the public service hereinafter specified and with such other powers and duties as may be prescribed by law."

We are satisfied that the Department has never been developed to the scope implied in the act and that to that extent it has fallen short of serving business as we think it should be served by this department of the government.

We desire to express to you our firm and unanimous conviction that the functions of the Department of Commerce shall be so amplified as to meet the purpose of Congress expressed in the definition of the province and duty of the Department above quoted.

It is evident that, to this end, the Department of Commerce should embrace all the non-regulatory bureaus relating directly to industry.

We feel that the whole statistical activities relating to production, stocks, consumption and distribution and movement of the basic commodities at least, excluding agriculture, should be concentrated in the Department of Commerce.

We feel that the basic industries will voluntarily aid your Department in the collection of the vital statistics because the Department of Commerce is, as you have expressed it, a service department to American industry and commerce and that its activities are in no respect to be inquisitorial or regulatory.

We feel that the Department of Commerce, while it is now a real aid to the extension of foreign trade, can and should be expanded to secure the fullest development of our foreign business.

We wish to add that we desire to co-operate with the representatives of other industries and trade associations in the further study of the details of the service which the department can perform.

Since this conference Secretary Hoover has asked Congress for an appropriation of $250,000 to establish twelve industrial divisions, of which paper would be one, to secure information on industrial conditions. He would have two experts from each industry, to alternate between field work and service in the Bureau of Foreign and Domestic Commerce.

U.S. FORESTRY LEGISLATION MAKES PROGRESS.

New York, May 25.—"Now that the Snell bill is in the lower House of Congress, and the McCormick bill in the United States Senate, both based upon the principles of the National Forestry Program Committee, we shall ask for extended hearings on the entire forestry problem by the Committees both of the House and the Senate," said R. S. Kellogg, Chairman of the National Committee, today.

"The program of the National Committee, which is based upon federal leadership and cooperation with the states and forest industries in the maintenance of a permanent timber supply, has already been endorsed by state foresters, state forestry associations and a wide variety of organizations, many of them national trade associations, to a total of 100, and additional support for the program is being reported daily. Many of these organizations will be represented at the Congressional hearings. One group which is particularly active, because of its realization of public interest, is the American Newspaper Publishers Association, and another is the Pittsburg Flood Commission, which favors the Snell-McCormick principle as a means of mitigating the Ohio River floods.

"The American Paper and Pulp Association, parent organization of the paper industry in the United States, has also been leader in the movement, though a consumer of only 3 per cent of the nation's timber cut, because it wishes to maintain its mills in America without dependence upon foreign raw materals. The American Forestry Association, wood using industries, women's clubs and others are working for the cause.

An Indianapolis furniture concern has tried out an experiment shipping furniture in stout fibre containers instead of in the ordinary wooden crate, hoping thereby to reduce freight charges. The initial shipment consisted of a number of chairs protected by fibre board cartons. This test shipment was said to have reached Chicago in good condition, receiving the O.K. of the carrier's agents. Specifications were not made known, but it is expected that the use of this container will be incorporated into shipping rules.

PAPER EXPORTS INCREASED; PULP DECREASED.

In the following table which is just issued by the Dominion Bureau of Statistics on the export trade of the Canadian Pulp and Paper Industry for the month of April, we find, on comparison, that exports of paper were almost exactly $1,000,000 greater in 1921 than in the same month for 1920. Unfortunately, however, this gain is much more than off-set by the loss in exports of pulp for the same time which it will be noted amounts to $1,250,000 roughly. This shows the paper industry in Canada to be relatively in better shape than in the United States, where most of the pulp goes. The value of pulpwood exported is, however, more than double what it was for April last year. This is nothing to brag about because if this wood which brought only about $15 a cord had been manufactured into pulp it would have brought in many more dollars even at the reduced value per ton of chemical and mechanical pulp. It is strange to notice that the price of pulp is not very materially changed. The price of pulpwood, it will be noticed, averages a little more than last year. While the record for pulp shipments is not a very cheerful one, the total for the month of April, 1921, amounts to almost 90 per cent of the trade of this industry a year ago. This, in view of the general business situation, is really not a cause for discouragement.

		Month of April.	
		1920	1921
Paper —			
Book paper	Cwt.	2,808	6,314
	$	25,302	83,796
Newsprint paper .. .	Cwt.	899,342	949,269
	$	3,827,541	5,241,893
Other paper	$	876,511	405,965
Total paper	$	4,729,354	5,731,654
Wood pulp —			
Sulphate (kraft	Cwt.	163,533	98,103
	$	620,728	424,430
Sulphite, bleached ..	Cwt.	131,161	40,711
	$	728,669	254,345
Sulphite, unbleached ..	Cwt.	397,359	98,744
	$	1,587,236	404,380
Chemically prepared ..	Cwt.	—	—
	$	—	—
Mechanically prepared .	Cwt.	198,664	64,070
	$	506,369	131,427
Total Wood Pulp ..	Cwt.	890,717	301,628
	$	3,443,002	1,214,582
Pulp Wood	Cord	40,433	73,017
	$	420,741	977,537
Country of Destination.			
Paper and manufactures of —			
To United Kingdom .	$	344,517	39,267
United States .. .	$	3,730,682	4,952,191
Other Countries ..	$	654,155	740,196
Wood Pulp —			
To United Kingdom .	$	514,568	1,440
United States .. .	$	2,506,825	1,075,418
Other Countries ..	$	421,609	137,724
Pulp Wood —			
To United Kingdom .	$	—	—
United States .. .	$	420,741	977,537
Other Countries ..	$	—	—
Total paper, wood pulp and pulp wood —			
To United Kingdom .	$	859,085	40,707
United States .. .	$	6,658,248	7,005,146
Other Countries ..	$	1,075,764	877,920
Totals	$	8,593,097	7,923,775

PAPER-MAKING IN OHIO.

Dayton, Ohio, June 9.—"Ohio is recognized as a great steel state. Do you men of Ohio realize that it has more paper mills than either of the great paper-making states of Michigan or Wisconsin, and that its mills were operating before there was a mill in either of these great western states?"

This was the question put to the Dayton Chamber of Commerce, when Dr. Hugh P. Baker, executive secretary of the American Pulp and Paper Association discussed the subject of "The Forest and the Paper Industry of Ohio."

"America's paper industry is in the billion dollar class, the value of its product placing it seventh in the list of American industries, and Ohio has fifty-nine separate mills. The success of any industry is partly dependent upon having its raw material close at hand. You have developed steel mills because you are near the coal and iron mines. And yet with Ohio's great paper industry, largely dependent on imported raw material, millions of acres of land which could be producing timber crops sufficient to operate these mills continuously on native raw material are lying almost idle. This is an economic waste.

"To-day 98 per cent. of the paper manufactured in this country is made wholly or in part from wood. Ohio is rightly classed as a great agricultural as well as a great industrial state, but out of its total of 26 million acres of land, over three million are classed as woodland, and there are over a million and a half acres of waste or idle land.

"If the land area of Ohio which is better suited to the growing of trees than for agricultural crops were covered with the right kind of forests, properly managed, Ohio would be independent of outside sources of wood for her paper industry. This same forest area might be used to supply lumber for home building and industries dependent upon wood.

"As a result of the excellent work being done by the State Department of Forestry at Wooster, and the Forestry Department of the State University, Ohio, for the two year period beginning July 1, will have $10,000 for fire protection, the same for forest nurseries, and $50,000 for the purchase of land for state forests, and $50,000 for the work at the experiment station. It would be a sound investment for the state to put up ten times this amount of $120,000 into the development of forest land, which will pay dividends of millions in raw material for Ohio industries, keeping at home great sums now sent out of the state.

"Your paper mill men are doing their share. The American Paper & Pulp Association is working for national forestry legislation, which involves the giving of federal assistance to states which are properly handling their own forest resources.

"You have the opportunity to make these great fast growing cottonwoods of your river valleys, and your other forest trees a tremendously valuable state asset."

PULP AND PAPER NEWS

Among Toronto business men there is heard considerable commendation of the attitude of the Canadian Manufacturers' Association in session in Quebec in protesting against the action of the Senate in "squelching" the bill for the provision of the much-needed Institute of research, on the ground of economy. It is felt that the Senate's action in this regard was quite uncalled-for and it is hoped that that body will take the hint given to it by Sir George Foster to deal more kindly with the bill next session. The need for the Research Institute is definite and urgent. And it is a highly gratifying circumstance that the Technical Section of the Canadian Pulp and Paper Association has decided to cooperate with the Committee on Industrial Research and to give its support to the creation of the Institute.

Mr. Angus McLean is one of eight to incorporate as Chaleur Hotel, Ltd., with an authorized capital of $150,000 to build and operate a hotel at Bathurst, N.B.

The Canadian Johns-Manville Co., Ltd., with sales offices at Montreal, Toronto, Winnipeg and Vancouver —which for some years has been operating one of the largest asbestos properties in the world, located at Asbestos, P.Q., has placed contracts for a large manufacturing plant to be located at Asbestos, P.Q., where they will manufacture all classes of asbestos products formerly imported from the United States. These products include asbestos paper, asbestos roofings, asbestos shingles, packings, pipe coverings, asbestos textiles, brake band lining etc. Here's a chance for Canadian machinery.

The strike of Toronto printers, pressmen and bookbinders is the principal topic of interest, and interest of a very anxious kind, in pulp and paper circles in Toronto. One very striking feature in connection with this strike is the very general resentment at the men's demands, displayed by commercial and business men, either entirely unconnected or very remotely connected with the industry in question. Everywhere in business quarters, one hears it said that the demand — particularly, perhaps, that for increased wages — are quite unjustifiable. Above all things (so runs the argument in commercial circles generally), economic conditions, at this moment, require that production costs be lowered, whereas the granting of the men's demands would inevitably result in an increase in the cost of production. It must be added that the business slackness, everywhere so unmistakably apparent in Toronto, gives considerable point to criticism of this kind. The Purchasing Agents Association has passed a strong resolution endorsing the action of the employing printers in their resistance to the men's demands.

Last week, a big forest fire at Amherst, Nova Scotia, swept over a large tract of land in the Upper River Hebert district of Cumberland county. The properties burned over are several thousand acres in extent, and are made up, for the most part, of tracts which were badly damaged last year. The fire is said to have had two origins, one from lightning and the other from a saw-mill.

Last week the employees of the Abitibi Pulp and Paper Company, at Iroquois Falls, returned to work after a strike of about a month's duration. It is stated that the men returned to work on the old wage scale, pending an adjustment of a new wage rate.

The problem of getting competent printers for the small towns in Canada is becoming a serious one. At Vancouver recently, at the annual meeting of the Canadian Weekly Newspaper's Association, the president, Mr. W. R. Davies, of Renfrew, Ont., urged the establishment of special printing courses in technical schools in all the Provinces.

The printers' strike in Toronto had its effect on the proceedings of the City Council there. All the reports required for the meeting on Monday were ready; but one report of the Board of Control had to be type-written, instead of being printed. Most of the reports had to be practically cut in two. At one of the big downtown printing establishments, which holds a contract for printing minutes and reports, the manager himself set the type and assisted at the presses.

NOTICE RE DEMURRAGE RATES.

Notice has just been received from the Board of Railway Commissioners, that at their sittings in Ottawa on Tuesday, June 21st, they will hear the following application:

"Application of the Canadian Manufacturers' Association, the Canadian Retail Coal Dealers' Association, the Canadian Pulp and Paper Association, the Hamilton, Chamber of Commerce, the Dominion Millers' Association, the Montreal Board of Trade, the Halifax Board of Trade, the Toronto Board of Trade, the Sherbrooke Board of Trade, et al, requesting the Board to call upon the railway companies and the Canadian Car Demurrage Bureau to show cause why the charges contained in Rule 9 of the Canadian Car Demurrage Rules should not now be reduced to the normal rate of $1.00 per car per day."

The above application was made by the Canadian Pulp and Paper Association, for the reason that a number of the mills had been obliged to pay, during the past six month, heavy demurrage rates on pulpwood and other material which was delivered to them by the Railways in greater quantities than they could unload within the free time limit.

The present high rates were authorized by the Board of Railway Commissioners as a war measure, at a time when empty cars were at a premium and there was grave danger of a serious fuel shortage in Canada. It is felt with the present surplus of cars, the high rates are too great a penalty on the shipping public.

Any mills who have experienced hardships due to the present demurrage rates, should send full particulars at once to the Transportation Department of the Canadian Pulp and Paper Association, Room 1404 Bank of Hamilton Building, Toronto.

UNITED STATES NOTES

Directors of the Bryant Paper Company, Kalamazoo, Mich., at a special meeting last week elected Felix Pagenstecher president, to succeed the late Frank H. Milham, whose death recently in California was noted in last week's issue of the Pulp & Paper Magazine. Mr. Pagenstecher's selection meets with general favor in paper trade circles. In his brief two years' service in the Bryant organization, Mr. Pagenstecher has won the esteem of his associates, and he is held in high regard by all in the trade who know him. He came to the executive staff of the Bryant Paper Company in 1919, serving since as executive assistant to Mr. Milham. He had been previously identified with the Riverview Coated Paper Company which he joined in 1902, at the time of its organization, taking the place as secretary. Under his personal guidance this concern became one of the most prosperous in the Kalamazoo valley district. It grew from a small six coater plant to one boasting of 18 coaters, and in addition operated its own paper mill. When the Riverview Company was merged with the Kalamazoo Paper Company, Mr. Pagenstecher continued as secretary of the consolidated organization. He resigned from this place two years ago to go with the Bryant Company. In a brief period he was advanced to the position of general manager, the post he occupied when death suddenly removed Mr. Milham from his activities.

A manufacturers' power conference, arranged by the Water Power League of America, will be held in New York at the Waldorf-Astoria Hotel, June 21-22. The meeting will be devoted to a discussion of power development, power shortage and fuel supply and costs. George H. Mead, of the Mead Pulp & Paper Company, Dayton, Ohio, is on the advisory council of the League. It is stated in the call sent out by the League that all governments of the world are rushing to completion hydro-electric developments, with the possible exception of the United States; that the utilization of the now unused 50,000,000 water horse-power in the United States would mean a yearly saving of fuel valued at one and a quarter billion dollars, and would release 800,000 men from the labor of mining and transporting coal. Manufacturers are asked to join in a movement to keep this power from being exploited for a few and to use it to supply cheap and constant power.

Mr. Dodge says there has been no change in the paper makers' strike as affecting the International mills, the men refusing to enter into negotiations over the company's proposals for a reduction of about 21 per cent. in wages to that which was in force for the year ended May 1, 1920. The strikers had demanded a ten per cent. increase and a change in working conditions. About 10,000 men are affected.

The census Bureau has just given out figures summarizing pulp and paper-manufacturing activities in the United States in 1919. The data, supplied by 713 establishments engaged in the industry in 1919, with products to the value of $789,548,000, serves as a statement preliminary to the 1920 census of manufactures. Of the total number of establishments listed in the returns, 481 manufactured paper only, 61 wood pulp only and 171 both paper and pulp. The 1914 census showed there were 718 establishments with products valued at $332,147,000. The 1919 production of paper amounted to 6,124,000 tons, valued at $682,043,000, as compared with 5,269,000 tons, valued at $291,588,000, produced in 1914, an increase of 16.2 per cent. in tonnage and 133.9 per cent. in value.

The nomination of Scott C. Bone, Seattle editor, for Governor of Alaska has been confirmed by the Senate. One of the considerations which, it is understood, caused President Harding to make the appointment is Mr. Bone's wide experience with problems of newsprint paper and wood pulp, which industries the present Administration expects to develop extensively from the Alaskan raw materials. Mr. Bone formerly was editor-in-chief of the Seattle "Post-Intelligencer," and for a time was chairman of the Alaska Bureau of the Seattle Chamber of Commerce. While serving in that capacity he made an extensive tour of Alaska.

John H. O'Connell, of the King Paper Company, Kalamazoo, was elected president of the Pulp & Paper Mill Superintendents' Association, at the business session held the closing day of the Convention at the Waldorf-Astoria Hotel, New York, June 4. Other officers elected are the following: George K. Walker, of Finch, Pruyn Company, Glen Falls, N.Y., first vice-president; Nelson R. Davis, of S. D. Warren Company, Cumberland, Maryland, second vice-president, and A. O. Rolfe, of the Champion Coated Paper Company, third vice-president. Peter J. Massey, of the W. F. Hall Printing Company, was chosen treasurer. A professional secretary is to be appointed by the executive committee. The next convention, to be held in Washington, D.C., October, 18 to 23, will be a joint one between the American Pulp & Paper Superintendents' Association and the Technical Association of the Pulp and Paper Industry.

Forest fires in Maine which, at last accounts, were still burning on a large scale in several places, have swept over 20,000 acres in the last month, according to a statement issued last Saturday by the State Forestry Commission. Reports to the Commission indicated that the situation was somewhat improving, although rain is badly needed. 500 cords of peeled pulpwood was destroyed in one fire which swept through three square miles of woodland on Eastern Island. The island is one of a group known as the Wolves, six miles from Grand Manan, N.B.

Edward Hatch, Jr., New York City merchant, has lodged a complaint with the New York State Authorities, in which he directs attention to an alleged pollution of the waters of Lake Champlain through wastes passing into its waters from pulp mills situated in tributary streams. Mr. Hatch charges that the water is being defiled, the fish killed, or their flesh tainted, the rim of the picturesque western shore caked with repellant pasty impurities, and the scenic beauty of this storied body of water destroyed by the sediment swept in from some of the rivers. Mr. Hatch makes it plain that he intends to renew the fight he made eighteen years ago against the mills, which ended, after nearly two years, in a victory for him and a redemption of the freshness and purity of the waters of the lake. He has brought the matter to the attention of Governor Miller in a letter sent last week.

Technical Section

A-15. Test for Uubleached Sulphite and Sulphate Fibers. R. E. LOFTON and M. F. MERRITT, Bureau of Standards, Washington, D.C. **Technical Association Papers,** Series III, No. 1 (Dec. 1, 1920). The difficulties to be overcome in developing a method for distinguishing between unbleached sulphite and sulphate pulps are due to the similarity of the pulps. Since the raw materials from which these pulps are made is in general the same, the only distinguishable difference between the pulps are to be found in the two different digesting processes employed in their manufacture. According to Schwalbe and others there are two differences between them which may be used as a basis on which to develop reactions which will differentiate them—viz.: (1) the difference in the amount of incrusting or ligneous material, and (2) the different chemical changes which have been brought about by the different digesting processes. The various methods proposed by earlier experimenters are reviewed: Klemm's methods (staining with malachite green, and staining with malachite green and then with rosaniline sulphate), Schwalbe's methods (staining with ferric chloride and potassium ferrocyanide, and staining with a copper salt and an organic dye), and Fannon's methods (staining with an aqueous solution of rosaniline sulphate to which is added 1 to 3 per cent of alcohol and enough sulphuric acid to cause the solution to take on a violet shade, and examining either with the unaided eye or with the microscope). The method proposed by the authors consists in staining with malachite green and basic fuchsine (magenta). The stain is prepared from one part of 2 percent aqueous solution of malachite green and two parts of 1 percent aqueous solution of basic fuchsine, and is mixed fresh a short time before using (not over a few hours). Owing to variations in the quality of dyes from various sources, after the stain has been made up it is necessary to test it out on authentic samples of sulphite, and the relative proportions of the two solutions adjusted in consequence. Sulphate fibers should have a blue, or blue-green color, and if any of them appear purple there is too much fuchsine in the mixture and a little more malachite green should be added. All the sulphite fibers should have a purple or pink color, and if any of them show green of blue there is too much malachite green and more fuchsine solution should be added. The method of preparing the sample and applying the stain is as follows: the sample is boiled in water or 0.5 per cent of caustic soda and shaken thoroughly in a test tube. Several fibers are placed on a microscope slide, dried with hard or filter blotting paper, 2 or 3 drops of the compound stain added, the excess removed with hard filter paper after 2 minutes, 3 to 4 drops of dilute hydrochloric acid (1 c.c. concentrated HCl to 1 liter of distilled water) added, the excess removed with filter paper after about 10 to 30 seconds, 3 to 4 drops of distilled water added, and the excess removed. If the excess of stain has not all been removed the washing with water must be continued, otherwise the cover glass may be put on. During the whole of the preceding treatment on the slide, the fibers are continually teased with the needle to insure thorough contact with the various reagents. The color contrast not only enables one to detect the presence of one or both of these fibers, but is sharp enough to enable one, after some practice to make an approximately correct estimate of the percentages of each of the fibers present. Results obtained on several known mixtures by three different analysts with four different makes of American dyes are given. —A.P.-C.

A-16. Acid-resisting Alloys. Can. patent No. 207,477, WILHELM and ROLF BORCHERS, both of Aachen, Germany, Jan. 11, 1921. A process for improving the acid-resisting powers of metals of the iron group, consisting in alloying such metals with 30 to 40 percent of chromium, about 5 percent of another metal of the chromium group, and about 2 percent copper.—A.P.-C.

A-16. Acid-Resisting Alloy. U.S. patent No. 1,354,-990, assigned to FOSTER MILLIKEN, Lawrence, N.Y., S. FULLERTON WEAVER and JAMES M. REPPLIER, as trustees, Oct. 5 1920. **Chem. Met. Eng.,** xxiii, 988 (Nov. 17, 1920). An acid-resistant and high temperature resistant alloy consisting of iron, 16 to 20 per cent; chromium, 5 to 7 per cent; copper, 31 to 38 per cent; nickel, 38 to 46 per cent; and manganese, 0.25 to 0.75 per cent.—A. P.-C.

B-2. Logged-Over Land Problem. Timberman, December, 1920. Discusses problems incident to the clearing of logged-off lands of Western Washington and their settlement by farmers. Results of conference held at Seattle, Wash., December 6 and 7, 1920.—C.L.

B-3. What Wireless Telephony Means to Canadian Lumbermen. DOUGLAS P. COATES, **Canada Lumberman,** March 15, 1921.—C.L.

B-4. Economic Importance of Jack Pine in the Pulp and Paper Industry. T. K. DICKINSON, **Canada Lumberman,** February 15, 1921. Emphasizes the availability of jack pine for newsprint manufacture and the large supplies of this timber available. "It is now an established fact that jack pine cooked alone will make a newsprint product equal to the best that has been coming from the Canadian mills."—C.L.

B-4. Research Facilities for Lumberman. Canada Lumberman, February 15, 1921. Advocates the establishment of a Division of Lumber in the Forest Products Laboratories of Canada. There are many problems which require solution but for which the existing staff of the laboratory is inadequate.—C.L.

B-5. Logging Hook. Can. patent No. 207,385, JOHN HYDE, Vancouver, B.C., Canada, Jan. 11, 1921.—A.P.-C.

B-9. Work of the Quebec Forest Service. G. C. PICHE. **Canada Lumberman,** March 15, 1921. The timber cut in Quebec on private lands is now almost as great as on crown lands. Crown timber revenue for fiscal year ending June 30, 1921, will, it is predicted, reach $3,500,000. Forecasts closer regulation of cutting operations by government foresters. Need for an extensive program of reforestation and for increased efficiency in forest protection.—C.L.

B-9. State Legislation and Policy. C. S. CHAPMAN, **Timberman,** December, 1920. Suggests policies of legislation applicable to the States of the Pacific Northwest, in connection with forest protection and forest management.—C.L.

B-9. Summary of the Lumber Situation and Outlook for 1921. Canada Lumberman, March 15, 1921.—C.L.

B-9. Statistical Survey of the Lumber Industry of Canada for Calendar Year, 1919. Canada Lumberman, March 15, 1921. Summarized from report of the Dominion Bureau of Statistics.—C.L.

B-9. Halt must be Called on Export of Pulpwood. FRANK J. D. BARNJUM, **Canada Lumberman,** March, 1, 1921. Advocates restrictions on the export of pulpwood cut from privately owned lands in Canada, in view of rapidly diminishing supplies of Canadian pulpwoods. Emphasizes heavy damage by fires and by insects and need for greater conservation of our forests. —C.L.

B-0. Report of Annual Meeting of Western Forestry and Conservation Association, held at Spokane, Wash., December, 6 to 8, 1920, **Timberman,** December, 1920. Discussion of national forest policy for the United States, reforestation, forest fire prevention, income tax situation, airplane control, and wireless telephone.—C.L.

B-0. Storm Damage to Olympic Peninsula Timber. Timberman, February 21, 1921. Very heavy damage done by windfall in the Olympic Peninsula of Washington and in southern Vancouver Island during the storm of January 29. Only a comparatively small percentage of this timber can be salvaged, and the fire hazard will be tremendously increased for a great many years to come. See also article by A. L. TICKNER, **Timberman,** March, 1921.—C.L.

B-0. Sweden as Source of Wood Goods. H. M. MELONEY, **Timberman,** March, 1921. In Sweden the large timber owning companies operate their own sawmills and pulp mills and employ an efficient corps of trained foresters who are in complete control of the vast timber holdings. Only selection cuttings and thinnings are permitted. The amount of cut is limited by law. In the manufacture of matches, aspen has previously been used largely, but owing to the depletion of supplies, substitutes have had to be found, of which birch is one of the most important. The Swedish people thoroughly appreciate their forest assets, and in this feature may be found the correct reason for the importance of their country throughout the world as a producer of wood goods.—C.L.

B-0. Forestry—When and Where. HOWARD R. FLINT, U.S. Forest Service, **Timberman,** March, 1921. —C.L.

B-0. Timber Gives Permanency to Many Activities. ROBSON BLACK, **Canada Lumberman,** March 1, 1921. —C.L.

E-5. McKee's New Sulphite Pulp Process. Can. patent No. 207,307, RALPH H. McKEE, New York, N.Y., U.S.A., Jan. 11, 1921. The process of producing paper pulp from resin-containing wood which consists in placing the wood in a sulphite digester, subjecting it to the action of liquid sulphur dioxide at an elevated temperature and at a super-atmospheric pressure, removing the main portion of the sulphur dioxide from the digester, adding sulphite liquid and subjecting the treated wood to the sulphite cooking process whereby paper pulp is produced therefrom.—A.P.-C.

E-5. Dilute Sulphuric Acid Preliminary to Sulphite Cooking. Can. patent No. 207,319, EMILE BRONNERT, Mulhouse, Alsace-Lorraine, France, Jan. 11, 1921. A process for the production of high percentage sulphite cellulose, characterized by the fact that under low pressure an opening up of the material by boiling with diluted, say 1 percent, sulphuric acid, is allowed to precede the usual boiling of the already prepared wood material with calcium bisulphite or magnesium calcium sulphite liquor under pressure.—A.P.-C.

F-4. Method of Concentrating Solutions. Can. patent No. 207,431, EDWARD SHAW, Toronto, Ontario, Canada, Jan. 11, 1921. The method of concentrating solutions which consists of continuously heating a solution under pressure sufficient to prevent steam formation, and exploding the solution in a separating chamber below the water level in the chamber.—A.P.-C.

F-4. Evaporating Process. Can. patent No. 207,481, AKTIEBOLAGET INDUNSTARE, assignee of NILS OLOF SODERLUND, both of Goteborg, Sweden, Jan. 11, 1921. An evaporating apparatus which comprises a chamber having an inlet and an outlet for a heating gaseous medium, means for introducing a heated gaseous medium in said chamber through said inlet, means for spraying the solution to be evaporated into said chamber, and a partition wall within said chamber inlet and outlet to cause the gaseous medium to travel through said chamber in the direction of movement of the sprayed solution.—A.P.-C.

G-8. Press Roll for Pulp. Can. patent No. 207,482, The Aktiebolaget Karlstads Mekaniska Verkstad, assignee of RUDOLF ERNEST WAGNER, both of Karlstad, Sweden, Jan, 11, 1921. A press roll for pressing woodpulp, cellulose and the like, provided with surface grooves the width of which is less than 1 mm. and the depth of which is such that material pressed into the grooves will become pressed by the bottoms of the grooves, said grooves being located at such distances from one another that the width of the portion of the cylindrical surface of the roller remaining between two adjacent grooves is at least equal to the width of the groove.—A.P.-C.

G-0. Electroosmotic Extraction of Water. Can. patent No. 207,561, GESELLSCHAFT fur ELEKTRO-OSMOSE, m.b.h., assignee of GRAF MOTHO SCHWERIN, both of Frankfort, a/M, Germany, Jan. 11, 1921. A process of extracting water from animal, vegetable, or mineral substances by electroosmotic action wherein the material to be freed from water is subjected to the action of an electric current in a space of constant volume containing the electrodes under pressure or suction exerted or transmitted by the material itself and without any movement of the drying matter. —A.P.-C.

K-6. The Manufacture of Waste Paper. Pappen-und Holzstoff-Zeitung (Nov. 25 and Dec. 2, 1920); **Pulp and Paper,** xix, 36 (Jan. 13, 1921). A rather brief description of certain machines and processes for the reclaiming of waste papers. (German patents No. 230,021; 316,469; 312,618).—A.P.-C.

K-10. Paper Size. Canadian patent No. 207,095, JUDSON A. DECEW, Montreal, Que., Canada, Jan. 4, 1921. A process of making sizing solutions which consists in diluting a resin soap containing over 25 per cent of free resin and then discharging it into a cold solution of sodium silicate until the total dilution is approximately 2 per cent total solids.—A. P.-C.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, June 11th.—Although satisfaction is felt that work has been resumed in the mills of Price Bros. and Abitibi, the past week has been an unsatisfactory one for the industry, to a large extent. The continuance of the strike among the printers in Toronto had naturally had a depressing effect and has resulted in a decrease of business. Moreover, it would be unwise to predict an early settlement of the strike. The employing printers, in spite of the fact that some shops (chiefly those which either employ but one or two printers or else are non competitive) have signed an agreement with the Typographical Union, express themselves as well satisfied with the way in which the situation is being handled by their organization, the Toronto Typothetae. The number of compositors, pressmen and bookbinders at work in their shops is increasing daily, old employees who had quit work are coming to their assistance, and they have put into effect a plan to train men and women to take the place of the strikers, and are expediting arrangements for establishing a school for apprentices in type setting. On the other hand, the Strike Committee of the Typographical Union appears confident of its ability to defeat the employers, and announces itself as being in receipt of messages from other towns and cities asking for instruction as to whether work sent thither from Toronto should be done.

PULP.—The pulp situation, according to the representative of one of the big pulp mills whose opinion was asked on the point, has recently shown some improvement. That improvement, he went on to say, is likely to be more substantial when the printers' strike is settled. At present, the demand is of a too spasmodic kind to occasion much satisfaction. He gave the following prices as obtaining at the moment: No. 1 bleached sulphite 6½ cents a lb.; easy bleaching, $80 a ton; new grade sulphite, around $70 a ton; and groundwood, about $30 a ton. These prices are all at the mill. Stocks in the hands of the mills and jobbers are being reduced, but the process of reduction is slow and is likely to continue so—at all events, until the conclusion of the printers' strike which is detrimentally affecting the sale of pulp.

PULPWOOD.—The cut has been a good one. Practically, all the wood has been contracted for, and most of the mills will take the wood at the contract prices.

BOOK PAPER—At once depressed and unsettled is the condition of the book market and that of bonds and ledgers. Here, again, the printers' strike has meant a lessening of business. In practically all lines, too, there is a lack of fixity of prices. The mills need orders and the jobbers are buying little. Moreover, the consumers are displaying an extraordinary economy. They are waiting for prices to come down, although, on the other hand, one hears it said, in some quarters, that the bottom of the market has already been reached. Certainly the consumer has reason to be economical if the price of $18 for 2,000 letter-heads, which the writer heard of as being lately charged to one consumer, be a fair criterion. Even that price, however, did not show any extraordinary profit to the firm charging it. Wholesalers, retailers and printers alike seem all to be keeping stocks down to the minimum. They are just drifting along—"living from hand to mouth", as the informant just quoted described the situation.

WASTE PAPERS.—There has been a certain amount of buying in certain lines of waste papers during the past week. For example, there has been a little business done in No. 1 Kraft papers and the better grades of white shavings. But in the cheaper grades of waste papers there is nothing doing. In fact, generally things are about as dull as they can be.

WRAPPING PAPER. The retail trade has shown some signs of picking up a little bit this last week. But the jobbers show no increased inclination to stock up. They complain that the business they are doing is very light, and the same complaint is heard from the manufacturers, in their turn. The demand is still away below what it ought to be, and, at the moment, there seems no early prospect of a substantial revival.

BOX BOARD.—There has been no recent change in board prices. The demand this week is reported to have been fairly good. But there is an idea that it is too "spotty" to justify much optimism. However, the general tone undoubtedly looks slightly better. Things are quiet but it is possible to keep the machinery going three or four days a week. The trouble is that no large deals whatever are being closed. Buyers are purchasing only from hand to mouth. When an order that should be for 500,000 boxes or so does come along, it will be an order for only 20,000 or 30,000. The manufacturer is not given a fair chance.

GREASEPROOF AND GLASSINE. — In these two lines of paper, there have been no recent changes in price. In both there is very little business doing.

TOILETS AND TISSUES.—There is a fairly good tone to the trade in these papers, taking the general depression in the paper trade into consideration. A fair amount of business is reported as having been done by the mills.

NEW YORK MARKETS.

New York, June 11 — (Special Correspondence). — Indications are accumulating that trade in paper is slowly but surely expanding. Taking all the reports received, it appears that a fairly good business has been done in the local market this week, and while it is plainly apparent that consumers in most instances are buying only against immediate wants, it is equally as apparent that demand is gradually broadening and that the movement of practically all kinds of paper is certainly quickening.

There have been quite a few important price changes noted within the past several days. Following the lead of the Canadian Export Paper Company in reducing its contract price on newsprint to 4.75 cents per pound, a reduction of three-quarters of a cent, the International Paper Company early this week announced a cut in its price on newsprint in standard rolls to contract customers over the third quarter of the year to the same basis. The new schedule is still $5 per ton above the first quarter of 1920, but the

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new price is generally considered very fair, not alone among paper men but by publishers as well. Commenting on the reduction, President Philip T. Dodge of the International Paper Company, said that the action was taken despite the fact that the cost of production for the third quarter of the year would be higher than that of the second quarter, and that the purpose was mainly to conform with the readjustment going on in business in general. Not only will the cost of labor continue high, according to present indications, said Mr. Dodge, but the cost of materials are high, for the International is consuming products contracted for at the peak of prices, being forced to contract for supplies, particularly of pulp wood, from eighteen to twenty months before they are used.

The newsprint market generally displays a steady tone. There is a growing demand for paper and publishers are not so cautious in buying as they have been in recent months, presumably figuring that prices are about as low as they are likely to be for a time and also probably feeling that newsprint will become scarce if the strike at mills is not soon settled. There has been no agreement reached by most of the large producing mills with their striking workmen as yet. The International Paper Company's offer providing for a settlement of the wage dispute on the basis of an average wage reduction of 21 per cent instead of 30 per cent as originally proposed by that company, has not been accepted thus far, and only in one or two cases have the strikers returned to work.

One of the largest manufacturers of kraft wrapping paper in the States announced a reduction in price on kraft of a full cent per pound several days ago, bringing the quotation of this company on No. 1 kraft wrapping down to 7 cents a pound at the mill. Other producers who had been quoting close to 7 cents promptly lowered their prices to around 6.50 cents, so that prices on No. 1 kraft wrapping now range from 6.50 to 7 cents.

Book papers are a trifle easier in price. Offerings of machine finished book by certain mills have been reported at 6.50 cents per pound, and instances have been cited where jobbers have sold small lots of this kind of paper at even lower figures, of course taking a financial loss in such transactions. Most of the demands for book papers is coming from publishing houses. Printers are doing very little buying of any consequence, and it is easy to be seen that matters in the job printing trade are anything but lively.

The board situation continues to improve. There are more orders of carload dimensions being placed today than in a long time, and mills are securing such an increase in business that they are becoming decidedly firmer in their attitude regarding quotations. Plain chip board can still be bought at $30 per ton f.o.b. mills, and in some out of the way cases at slightly less than this figure, yet a majority of manufacturers are now quoting close to $35 and are growing increasingly insistent on obtaining this price. Filled news board is selling at $32.50 to $37.50 per ton, with most producers asking the higher figure.

The improvement in box boards seems to be largely a psychological affair. Paper box manufacturers have been confining their purchasing of board so long to small quantities as immediately required that many of them, seeing prices commence to strengthen in spite of the light demand, have resumed buying in carload lots, with the result demand has broadened considerably. At the same time, there has been no large expansion of operations in the paper box trade. There is a fairly good demand for boxes, but evidently hardly enough to warrant the sharp spurt in demand for boards.

GROUND WOOD. — The ground wood market rules steady in tone but displays little feature. There is a moderate call for supplies from consuming quarters and yet few of the sales recorded today involve large tonnage because consumers are absorbing only such pulp as is directly needed. Indications are that there is a smaller surplus supply in grinders' hands than formerly, and this factor has its influence in keeping prices firm. Spruce ground wood of prime quality is selling on an average at around $38 per ton delivered at consuming points, which is equivalent to approximately $30, on an average, at producing mills in the States and slightly under this at Canadian grinding plants.

CHEMICAL PULP. — There is little change in chemical wood pulp. Prices as a rule show a downward tendency, and it is really apparent that most of the buying now being engaged in is at the low level of quotational ranges, yet manufacturers of pulp generally name about the same prices as before. Probably the strongest item in the market at present is news grade sulphite, which is held by a majority of producers at $75 per ton or higher at pulp plants, and which is meeting with a comparatively good demand. Prices on bleached sulphite continue slightly uncertain. Several large producers are asking 6.50 cents at pulp mills for No. 1 bleached, yet it is difficult to see how they are managing to secure this price when bleached sulphite is offered in other quar-

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ters at less than 6 cents, with reports heard of some grades of bleached available down to 5 cents. Buyers show a disposition not to pay above 4 cents for domestic easy bleaching sulphite, nor more than 5 cents for soda pulp, and it is understood that most of the spot market business passing in these grades are at around these prices.

Importers report little activity in foreign wood pulp. Paper manufacturers are buying only when necessity forces them to, and are even then taking but small quantities. Pulp sales consist chiefly of spot stocks on this side, there being few orders placed for shipment from primary sources.

RAGS. — Roofing rags are sought in increasing volume and this end of the papermaking rag market is in a fair way toward a return to normal activity. No. 1 roofing stock is freely bringing 90 cents per hundred and up to one cent per pound f.o.b. New York, while numerous sales of No. 2 roofing are reported at a price basis of between 70 and 80 cents a hundred pounds. The larger movement of roofing is having a sentimental influence on the higher qualities of rags, because dealers in general look for other grades to follow the uptrend in satinets. Demand, however, for most other grades is light and prices have changed but little, if any. No. 1 repacked old whites are offered at 5.25 to 5.50 cents per pound at shipping points, and No. 2 repacked at around 3.25 cents, while old repacked thirds and blues are available to mills at 1.75 to 2 cents. Reports have been heard of transactions in No. 1 white shirt cuttings at as low as 9 cents a pound New York, although dealers mostly ask better than this figure. New cuttings as a class of rags are in very limited demand.

PAPER STOCK—Quite a run of demand continues on several kinds of old paper, and these descriptions are fetching fancy prices in comparison with other grades which are not in so much demand. Old kraft is in particularly good call, and it seems doubtful that dealers in New York would accept mill orders at 2 cents a pound f.o.b. this city because of the difficulty in locating this material. Asking prices now range at around 2·25 cents, and there is but little kraft paper offered at this basis. White news cuttings are held with firmness at 1·65 to 1·75 cents per pound at shipping points, and old books and magazines are gradually strengthening in price, with about $1 per hundred pounds the average quoted at present. Old No. 1 mixed paper is moving in fair quantity at 30 cents per hundred f.o.b. New York, but folded newspapers are provided with a narrow mill outlet, because board manufacturers evidently are running mainly on chip board, and are freely available at 40 cents New York.

OLD ROPE AND BAGGING—Old rope holds quotably steady at 4 cents per pound for No. 1 manila and is moving in a routine way into consuming channels. Old bagging is in a dull market position and prices are largely nominal.

ANNOUNCEMENT.

Leslie H. Allen, who has recently been with Fred. T. Ley and Co. contractors of Springfield, Mass., first as an industrial housing engineer and then as sales manager for New England territory, has joined the staff of the Portland Cement Association, 111 West Washington Street, Chicago, as Assistant Manager of the Cement Products Bureau. Prior to joining the Ley organization, Mr. Allen was for 12 years with the Aberthaw Construction Co. of Boston.

THE SILENT SALESMAN'S "APPROACH."

What clothes are to a salesman, the envelope is to a letter or circular. Actual tests have proved that an attractive envelope of sufficiently good quality paves the way for a more favorable reception of the message which it contains. The envelope is the "approach" of the printed salesman.

"But why give much thought to the envelope?" some advertisers object. "Mail sent to big offices is opened before it reaches a buyer or executive. He never sees the envelope and we don't care what impression it makes on the office boy who opens it. The man in the small office or store opens and reads all the mail he receives, regardless of what sort of envelope it comes in, so why waste efforts on well-prepared designs for him?"

Such an argument is about as logical as sending out a salesman poorly dressed on the theory that the big buyers probably won't see him anyway, and the smaller men won't care how he's dressed.

An envelope's first requisite is strength — strength sufficient to protect its contents during transit through the mails and insure their reaching their destination in good condition.

But a very important *secondly* is — attractive appearance. This does not necessarily mean an elaborate four or five-color cut, costly hand-lettering, etc., to replace the familiar corner card. The outside of the envelope should be in harmony with its contents. If these contents consist of a sales letter or advertising literature, the selling talk elaborated in the letter or booklet should begin on the envelope itself — it should prepare the prospect's mind for what is to follow, and put him in a buying mood.

The printer who educates his customers to the advertising possibilities of the envelope is not only giving better service but is building more business for himself. Intelligent service, through better printing and sales-making suggestions, will lift a printer out of the price-competition class. Like Emerson's man who built a better mouse-trap, buyers "will beat a path to his door".

Because of their advertising value, envelopes are becoming an increasingly important factor in Canada's business life. Fully aware of this, Canadian envelope manufacturers in every large city of the Dominion carry large stocks of standard size envelopes for immediate delivery, and are always ready to furnish special sizes to order, made of any stock desired. With Canadian manufacturers thus prepared to meet all requirements, the buying of envelopes from foreign makers is a useless and costly practice. Yet, in the year ending March, 1920, over *fifty million* envelopes were imported into Canada!

This is one more example of the unnecessary imports which are keeping the Canadian dollar below par and reducing the number of printing orders by lessening employment in Canadian industries.

It is a condition which printers can do much to remedy by running every job on Canadian-made paper. Help to stop this unnecessary importation of foreign goods by ordering envelopes made of Canadian stock by Canadian manufacturers.

It isn't a good plan to allow your regrets for yesterday to overshadow your hopes for tomorrow.

Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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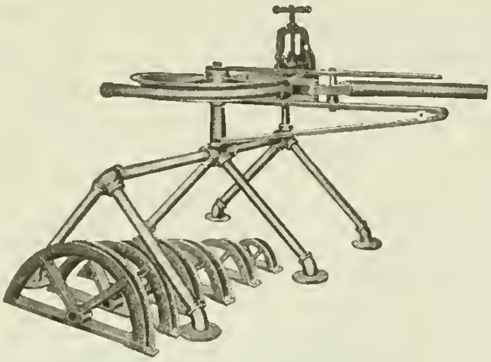
Pipe Tools That Save Time in Pulp Mills



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EDITORIAL

UP IN THE AIR.

While "the band played on" at the Laurentide Inn last Thursday evening, one of the hydroplanes of the Laurentide Forestry Department could be seen gracefully circling about in the air above. It is not so many years ago since Langley's pioneer experiments and the successful work of the Wright Brothers. Flying is an everyday event now and an aeroplane overhead attracts scarcely more attention than a passing automobile. It is certainly less dangerous to the pedestrian. The Great War occasioned great progress in the employment of the flying machine. Since the war ended, many opportunities for using the airplane in peaceful pursuits have been found—from handling mail to smuggling booze. But the most important and promising application, as far as the pulp and paper industry is concerned, is the forest protection and surveying. The use of airplanes and flying boats for these purposes is well beyond the experimental stages. Trials in California, British Columbia and Quebec have established the feasibility of airplane surveys and fire inspection.

Federal and Provincial Governments receive a large proportion of their revenue from the forest, but, in comparison with other countries in like position, notably Sweden, the expenditure for protection and reproduction of the forest is pitiably small and niggardly. Even the Province of Quebec, which is admittedly the leader on this continent, in such matters, spends on the forests only 10 per cent of the revenue they produce, while Sweden re-invests 50 per cent of the income from this source.

The more extensive use of aeroplanes should be immediate and general. There are yet four months of good flying weather, and we are sadly in need of information which can be gathered by aeral observation. Our forests are very inadequately mapped, both as to location, extent, kind, and condition. With this basic information properly mapped, an inventory, at least annually, is imperatively needed to know even approximately where we stand as to the balance in our woodland bank. That is our principal national resource, next, perhaps, to our water powers, and these powers will surely disappear if our forests are not protected.

A dispatch from Ottawa states that a number of lighter-than-air machines are available for demonstration, and firms interested in forestry and fire protection are offered the loan of them. It seems to us that the burden of experimenting is being placed too heavily on private enterprise, when it is a matter of concern and benefit to the whole community. Such work should be undertaken by the Province, and extra support, if needed, obtained from all companies alike, by higher stumpage. Freehold land owners could be reached by an assessment for protection, and the foreign buyer of freehold wood could be made to contribute to the protection of the forest from which his supply is obtained by having an export tax.

A number of pulp and paper companies already have hydroplanes in use. The provinces should be more active along this line. There is hardly a more appropriate use for the aeroplane. Its use is essential in any efficient scheme for the protection of the forest.

A recent movement that will greatly help in this direction is the formation of the Commercial Air Pilots' Association of Canada, the secretary of which recently wrote as follows to the President of the Canadian Pulp and Paper Association:

> Dear Sir,—We believe you will be interested in knowing that our association, comprising a large majority of the active commercial Air Pilots of Canada, has recently come into existence for the express purpose of elevating the standard of requirements of commercial aviation both from an equipment and personnel point of view. To quote an extract from our constitution:
>
> "The association is to try to uphold a high standard of efficiency and professional conduct so that the fact that a pilot is a member of the Association will be a guarantee of his professional ability."
>
> It has come to the attention of a number of our members that certain pulp and paper interests have suffered severe losses during the past season, due mainly to the numerous accidents to aircraft. It is our aim to keep repetitions of such occurrences at a minimum by first making absolutely certain that a pilot holding membership in this association is qualified for commercial work, and second, by asking the co-operation of the industries making use of aircraft, to the extent of making application to this association when in need of commercial pilots.
>
> There are three classes of membership in the association:
>
> 1.—Senior Member; one holding a commercial pilot's certificate issued by the government, and having had at least one season's actual experience in commercial aviation.
>
> 2.—Junior Member; one holding a commercial pilot's certificate issued by the government, but who has not had one season's experience in commercial aviation.
>
> 3.—Associate Member; a Senior member who has ceased flying for a period exceeding twelve months.
>
> We believe you will at once recognize the importance and value of such an association and we ask your assistance and co-operation and invite your enquiries.

The pulp and paper industry will be interested in the Air Pilots' Association, and the more interested the better for the industry.

COBWEBS.

At last, there seems to be an awakening to the need of public and official action in the fight for health. Health is the biggest asset of the individual and so of the community. A sick person is a burden on the community. Medical expense is generally a waste because it can be prevented by care. The Department of Health at Ottawa has begun an energetic campaign against venereal disease, infant mortality, and tuberculosis. It is primarily a problem in education. Pamphlets and posters on the first subject, in both French and English have been received. Every mill should get in touch with the Department and help the good work along. The fight on infant mortality and tuberculosis requires both education and income, since poverty plays a great part. A sufficient wage and fair rent will help a lot. Most paper mill towns would show good records in both these items.

An Ontario settler will know better next time and perhaps a few others will learn from his experience. He set a fire which eventually destroyed half a million feet of pine timber. The Sudbury Police Court sentenced him to a month in jail at hard labor. That is very good news. A few more convictions with jail sentences would teach people it is a crime to burn timber. Permits for burning slash under proper supervision, can be had for the asking.

A friend in England writes: Things are dull here—dead. The coal miners are out now, the Textile workers have joined them, and the engineering employees may follow suit any day. Things are very critical—and close on £35,000,000 spent on unemployment. There is no other country in the world so philanthropic!—and so upside-down.

An Edisonian question for "Techseeters": Why cannot what liquid be kept how long in what kind of a cup?

We don't understand why the special cars were necessary when there were two Busses belonging to the Technical Section.

"NOT INCLUDED IN THE PROGRAM."

Gus Arbo was heard softly playing "Sahara" at Grand'Mere, thinking no doubt of Hawkesbury.....

A. O. Bowness was in rare form and thinks if he could be allowed to make Tissue on Laurentide's machine he could make paper at 1,500 feet a minute.

Charlie Buss was on deck at all hours, day or night.

"Doc" Bates was another welcome guest. He has considerable skill at "golluff."

Ross Campbell makes a great delegate; here, there, and everywhere. Two others of the same clan sat down dinner—F. J. & "Lew".

Ed. Wardle was heard to ask the Band to play, The Campbells are coming.

George Carruthers is inimitable, and "by Jove" he can say "Begorra" better than any Scotchman.

George has a story for every occasion and is at his best when most needed. He handled the Laurentide Dinner to the King's taste.

Costigane was on the job all the time looking for holes to fall into and cogs to get caught in.

Messrs. Dewar & Walker are still going strong.

Crossley is an old timer when it comes to Laurentide; he was there when they used water to wash with, not to make electricity.

Fire-Chief Berthiaume made a great hit with the boys, and as a press-agent for Trois Rivieres would be hard to beat.

Jentz, King and O'Reilly were the Three Graces of the party. They did'nt overlook a single bet.

It is rumored that George Carruthers is now taking French lessons. So that he can start his speech, "Messieurs et Mesdames."

Lafrance is in Mlle. Lenglen's class when it comes to tennis.

Tom Nuttall made a hit with the crowd.

Editor Stephenson was the only man in the trip that did any work. He was observed bullying Bryson Millidge and Grindstad into checking some parts of the Text Books. However Steve has made up his mind to have those Text Books ready.

P. B. Wilson made his first official visit to the St. Maurice Valley as President of the Association. A compliment that the Technical Section appreciates and will remember. The exchange of wit between P. B. and Geo. Carruthers was a case of diamond cutting "cairngorm".

Did any of the members see the look of anguish on Orville Bryant's face as he searched for cold soda water?

The waste liquor problem has now been definitely settled by the Quebec Commission.

Kellogg must be raised in Battle Creek. He climbed hills, played tennis, swam, ran races, and was fresh as a daisy all the time.

NOTE:—The Editor did **not** write these notes.

Writing Manilla is just the stock for Production order forms. Strength is a requisite, for Production Orders are handled over and over in the various shops before they finally reach the cost department for entry in the books.

A Student Apprentice in a Paper Mill[*]

By A. B. COPPING, Winner of the Essay Contest of the Technical Section.

Explanatory Note.

It having been decided by the management of the Brompton Pulp and Paper Company to carry on a series of investigations on various processes and operations practised at their mills at East Angus and Bromptonville, six students were taken on the strength of the Technical Service Department in addition to the regular staff. This party was under the direct supervision of the head of the Department, and its work was guided primarily by a committee consisting of the Assistant Manager, the Technical Service Head, Groundwood Superintendent, News Superintendent and two of the students. This Committee acted only in an advisory capacity and practically all of the details of the tests were left to the party itself.

A Tour of the St. Maurice Valley.

The writer, before coming to the Brompton Mills, was sent on a tour of inspection, investigation and instruction to the St. Maurice Valley Mills, especially with a view to becoming acquainted with the operation and installation of Voith Magazine Grinders—these are used to the exclusion of all other types at the Laurentide Mills. At the mills of the Belgo-Canadian Company an exceedingly good system of technical control was noted, and much help was obtained at the St. Maurice Paper Company at Three Rivers. An unsuccessful attempt was made to visit the plant of the Wayagamack, where, it is understood an excellent system of technical control is in operation.

Work to be Accomplished.

The work done during the Summer may be divided as follows:—

(1) Investigation of the existing conditions in the Groundwood Mills.

(2) Experimental work in the Groundwood Mills with a view to finding the conditions of grinding most conducive to the production of uniformly good stock for the manufacture of News print.

(3) Control of grinding by systematic stock examination when the above conditions were found.

(4) Investigation of the conditions surrounding the formation of the sheet in the News Mill, including the condition, flow and regulation of stock, white water, and such problems as waste, steam consumption, moisture in product, etc.

Allotment of Parties.

To this end, the party was divided into two crews, one of which bent its energies to the Groundwood problems while the other one looked after the News Mill.

The writer spent the first month of the time with the Groundwood crew and during this time tests were run in order to get an idea of the normal conditions of grinding as practised in the Groundwood Mills of the plant. The remaining three months of the Summer were spent in the News Mill Investigation.

Tests.

The main tests used by the department were:—

Consistency of Stock.—This test, a universal one, consists simply of weighing a suitable amount of stock, which is then dried done-dry and re-weighed. The bone-dry weight divided by the original or wet weight is the consistency. It should be noted that frequently consistencies are given as air-dry. An air-dry consistency is one in which the dry stock is considered as containing 10 per cent moisture.

Sedimentation Test.—The tester used was the Fishburn Sedimentation Tester as described in "Paper" of October 11th., 1916, and was invented by a Brompton man, Mr. V. E. Fishburn together with Mr. O. L. E. Weber.

The tester consists essentially of an upright graduated cylinder, preferably of glass tubing about 3 or 3¼ inches in diameter, and 14-in. high. At the bottom of the cylinder there is a piece of 70 mesh Fourdrinier wire which is clamped in place by a hollow metal cone or funnel, which terminates in a short metal tube fitted with a piece of ¼-in. rubber tubing. An ordinary pinch cock is provided for the tube in order to release the water in the cylinder.

In the course of many tests during the Summer it was found that the long tube mentioned in the description of the apparatus in "Paper" is not necessary, and is liable to introduce errors by retaining pulp unless it is very carefully washed after each test. Consequently the long tube was discarded and a very short one used in its place. This substitution had practically no effect on the calibration of the instrument as was shown by a serious of tests run for this purpose.

The method of operating the apparatus is as follows:—

Dilute the sample of slush received to about .5 per cent consistency and mix well in a mixer. Pour into a quart fruit jar. Pipette 25 cc. of this into a weighed shallow can and dry on a hot plate for 30 minutes, being careful not to burn the pulp. Cover the can and cool the can in a dessicator. Weigh the can plus the pulp, and from this get the weight of the dry pulp.

e. g.:—Weight of can .. .. 34.0989 grms.
Weight of can and pulp .. .. 34.2221 grms.
Weight of dry pulp from 25 cc. .1232 grms.

$$\frac{.1232}{25} = .00494 \text{ grms. per cc.}$$

$$\frac{1}{.00494} = 202.5 \text{ cc. for 1 grm.}$$

The consistency to run the test is best at 1 grm. per 2,000 cc., and we need 1,500 cc., to fill the apparatus.

$$\text{Therefore } \frac{1500}{2000} \times 202.5 = 152 \text{ cc., pulp necessary.}$$

Dilute this amount with water to 1,500 cc., and use this in the tester.

Before introducing the sample into the cylinder, water is poured into the cylinder and allowed to run out by the pinch cock till it just covers the wire disk. The sample is then introduced into the apparatus and the cock instantly removed. When the top of the sample has reached the second graduation on the glass the time is noted, or the stop-watch started. The time is again noted when the stock has reached the bottom graduation. The time taken in this way is recorded as the Sedimentation Time for that particular sample.

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[*] Notes on Investigations of the Technical Service Department at the East Angus Plant of the Brompton Pulp and Paper Company May to September 1920.

Care must be taken that the water used is of a constant temperature as the test falls down unless this is done. In this connection a test was run to determine the effect of temperature on sedimentation time, the results of which follow.

Sample taken from flow-box of # 2 Machine at 10.10 hours July 2nd, 1920.

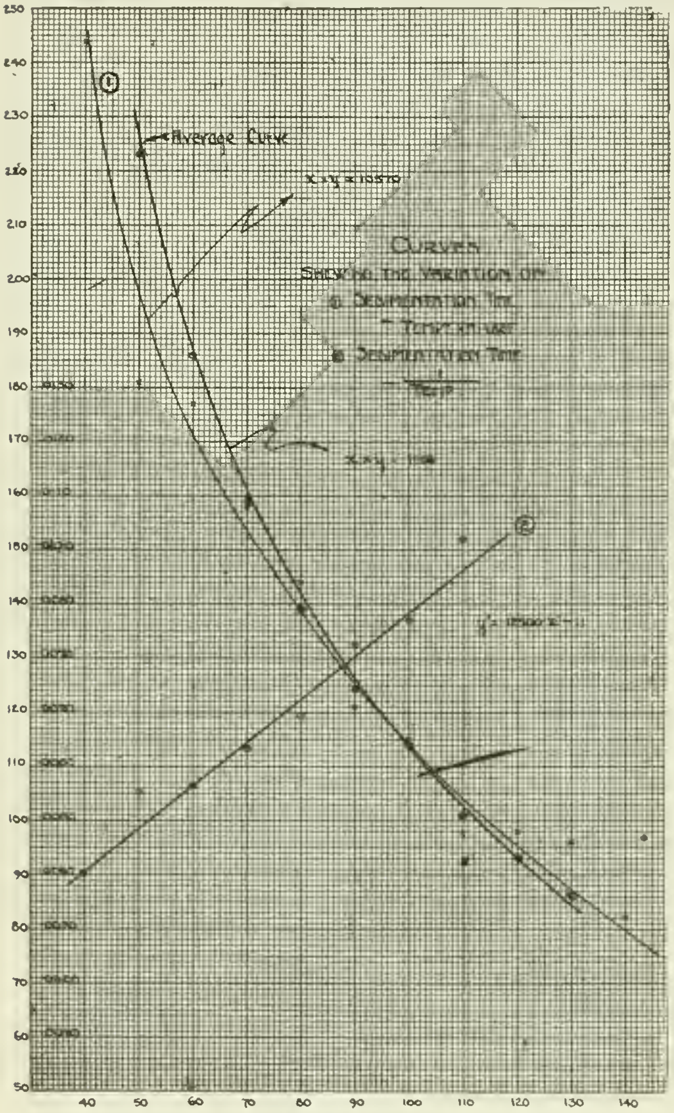

Fig. 1.

Bone-dry weight of pulp	No. of ccs. in 1500 at 1/2000	Temperature	Sed. Time	Reciprocal of Sed. Time
.929	161.5	40	244	.00409
		50	181	.00552
		60	177	.00565
		70	158	.00633
		80	144	.00695
		90	121	.00827
		100	115	.00870
		110	98	.01020
		120	98	
		130	96	

These results will be found plotted on the curves shown in Fig. 1, along with the reciprocal of time and an average curve for the purpose of showing how closely the results obtained agree with it. The equation of the curve was obtained by the following reasoning:—

Since the time decreases with the increase of temperature we can assume that the equation of the curves is the form

$$x \times y = k \quad \text{or} \quad \text{Temp.} \times \text{Time} = \text{Constant.}$$

$$x = \frac{k}{y} \quad \text{or} \quad \text{Temp.} = k \times \frac{1}{\text{Time}}$$

$$\text{Let } \frac{1}{\text{Time}} = z$$

Then $x = k \times z =$ equation of a straight line.

Now replotting Temp. as abscissae and reciprocal of time as ordinates we get curve # 2.

$$y' = ax' + b \quad \text{or} \quad x = (k \times z) + b$$

$$a = \frac{dy'}{dx'} = \frac{50000}{4} = 12{,}500$$

$b =$ value of y' when $x' = 0 = -11$;

When $4' = 0$, $x' = 34.3$

$y' = 1.25x' - 11$ is equation of reciprocal curve.

$$\text{Temp.} = \frac{12500}{\text{Time}} - 11 = \text{Equation of temp.—time [curve.}$$

or Temp. × Time = 10,570.

No attempt is made to counteract the expansion of water in these limits, nor for the expansion of the wire in heating, and therefore an error is unaccounted for.

Strength.—The ordinary Mullen tester is used, both in the News and Kraft mills. The operation of this machine is such that the sheet to be tested is held firmly in place over an orifice of one square inch area and broken by pressure transmitted by glycerin to a rubber diaphram. And indicator dial records the bursting pressure.

Basis Weight.—This is taken by the back-tender on the scales specially graduated for the purpose, so that the weight in pounds of 500 sheets of 24-inch x 36-inch is read directly by weighing a single sheet of that size.

Moisture in Paper.—Pending the arrival of a Williams Oven the moisture in the paper was obtained by weighing samples of paper as they were brought over to the laboratory in air-tight glass bottles. The paper was then put in the oven where it was allowed to dry for at least three hours, when it was again weighed. The loss in weight divided by the original weight gives the per cent moisture. Towards the end of August a Williams Standard Paper Moisture Tester was received and put into operation.

Microscopic.—The equipment of the laboratory included a microscope fitted with a plate camera, and these in addition to an enlarging machine built by a member of the summer workers crew gave an excellent opportunity for examining at close range, the quality of the fibres and the paper formed. Permanent records were made of certain types of stock for the purpose of comparison. Of the latter several will be found appendixed to this report.

Blue Glass Test.—This test was adopted by the Technical Service Department after due consideration of its merits and demerits, following observations on its use at the Groundwood mill of the Laurentide Company, as being the best test in existence for the purpose, viz.: The examination of slush for general quality of fibre. The apparatus used consists essentially of a piece of blue glass set in a suitable frame which will retain water on the surface of the glass. When dilute slush is poured on the glass and viewed by indirect light its nature is shown up very clearly, and its suitability for the formation of a sheet is readily determined. Before definitely settling on the type of apparatus to be adopted experiments were tried with various forms, notably those in which the lighting arrangements differed. The type finally decided upon consisted of a tray containing four squares of glass set side by side and sliding under a small box which contained an electric light and a tin reflector. A circular hole was cut in the top of the box and was fitted with a reading glass. Thus four samples of stock could be examined and compared at the same time. Fig. 2 shows the arrangement of the instrument in its final form.

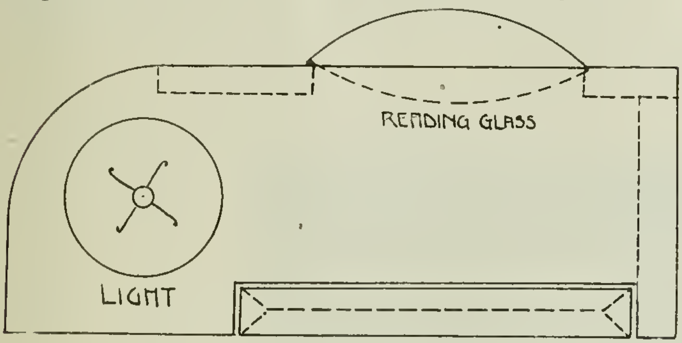

Fig. 2

Lantern Test.—Examination of fibre as projected on a screen by a lantern was carried on for some time in conjunction with the Blue Glass but was later superseded by it.

An Assumption.

It is logical to suppose that if a mixture of groundwood fibres of a composition akin to the mixture of sulphite and groundwood now found in the flow-box of a news machine can be produced by technical control of the grinding and screening processes prior to the news mill, then newsprint paper can be made from groundwood alone.

Some Comparisons.

It is good mill practice to use 25 per cent sulphite and 75 per cent groundwood in the manufacture of newsprint paper. If one will look at the report of the News Print Service Bureau for the month of March, 1920, he will see that all of the twenty odd mills listed use more than twenty per cent sulphite with the exception of the Brompton Company which at that time was using in the neighborhood of eighteen per cent (18 %).

The report of the Canadian Export Paper Company's Cost Statement for the five mills under its supervision for the month of July, shows that the Laurentide Company, Belgo, Price Bros., and St. Maurice averaged over twenty-five per cent (25 %) of sulphite, whereas the Brompton Company was listed with 13·7 per cent sulphite. At the present time (September, 1920) the same company is using much less than this amount, and for several days has run successfully with a total of 8·3 per cent sulphite for news running at 660 feet a minute.

We assumed that if it were possible to obtain a mixture of groundwood fibres akin to the sulphite-groundwood combination, then newsprint paper could be made from groundwood alone. Old papermakers will tell you that if you run slow enough you can get a sheet of groundwood alone. Several International Paper Company men have solemnly assured the writer that it is impossible, because of extensive tests carried out in Glens Falls, N.Y., to make newsprint from groundwood alone.

Lack of Research.

During the last few years an extensive agitation has arisen among engineers and technical operators because of the hopeless lack of control in the pulp and paper industry. It is true that Mr. Robert B. Wolf has made a name for himself due to his original work, and also of his collaborator Mr. Hugh K. Moore, at the Burgess Sulphite Mill at Berlin, New Hampshire, but in the manufacture of mechanical pulp very little control work has been attempted, outside the work done by Mr. John Thickens, then chemical engineer, at the Forest Products Laboratories at Madison, Wisconsin, and lately undertaken in a few large news mills. And in the paper mills the old paper-maker reigns supreme. He has been taught how to make paper just as his father was taught how to make paper.

An Old Trouble.

The Fourdrinier machine of many years ago was, in principle and construction, although on a smaller scale, identical with the 940 foot a minute newsprint machine at Millinocket, Maine. The present day paper maker has a profound disuse for and dislike of the technical man, and it has been a hard problem for any engineer to introduce innovations in the paper mill. At the Brompton Mill we had a different condition. The Superintendent of the News Mill was an engineer, probably the only technical superintendent in the country, and, realizing the help he could get from our investigations, he gave us his hearty and helpful co-operation.

We begin in our hypothesis by assuming primarily that we always grind our wood in the same manner. We will explain a little later how we propose to do so.

Controlled Screening.

Let us examine first an ideal screening system.

If we have a uniform mixture of fibres at the bull-screens, then we attempt to screen always in the same manner. Therefore, we can expect, leaving the bull-screens, a stock which always contains the same proportion of long and short fibres. To carry the thing further, we try to screen uniformly at the fine screens, that is, we have the stock leaving the bull screens at say ·75 per cent consistency and we dilute, prior to the fine screens with a constant amount of white water, by a standardization of the valves, so that the stock always enters the fine screens at, say, ·45 per cent consistency. The high pressure white water showers in the screens is also controlled by standardized valves so that the stock leaves the screens at ·42 per cent consistency. If this is carried out we can expect, presupposing that the grinding was uniform, that the stock leaving the fine screens always contains the same proportion of fine and large fibres, and that the amount of tailings is constant. The tailings, and we always know the amount and the consistency, are rescreened through screens with the same openings as the fine screens. Whatever goes through, and our plan presupposes that always the same amount goes through, is number one stock. Whatever is rejected is sent to a Claflin refiner or a refiner of a similar type.

The refined stock is screened through a screen similar to the fine screens and the same process is carried on as before.

The idea of one type of fine screen does away with the possibility of losing our uniformity of longs and fines.

The next step is at the Thickeners. Here a constant head of stock back of the cylinder must be maintained because a constant amount of fines is being pressed through the cylinder and becomes white water, whereas a constant mixture is being gathered on the cylinder and removed to the decker chests.

The stock is then pumped over to the large storage chests in the news mill. Attached to the pump is a Trimbey Regulator. The principle upon which the operation of the Trimbey is based is that of the change in friction opposing the flow of stock of different consistencies, and is minutely explained in the pamphlet issued by the manufacturers. It may be stated parenthetically that a tendency was found of stock to overflow at times. This was remedied by the simple expedient of fitting a small plunger in the constant level box so that as it moved slowly up and down in the outlet pipe there was no chance of the flow being arrested by the accidental entrance of some insufficiently beaten stock or foreign matter.

A curve showing an actual test on the performance of No. 1 Regulator is attached.

We have now brought our stock from the grinders in our ideally controlled system to the point where it is regulated in consistency and here we leave it.

Formerly, before we decided that newsprint could be made without the addition of chemical pulp, the proper thing in the industry was to have a system of mixing chests. We will not discuss these because they are used at the present time in most up-to-date mills.

(The next instalment will take up Groundwood Control, etc.)

(To be continued.).

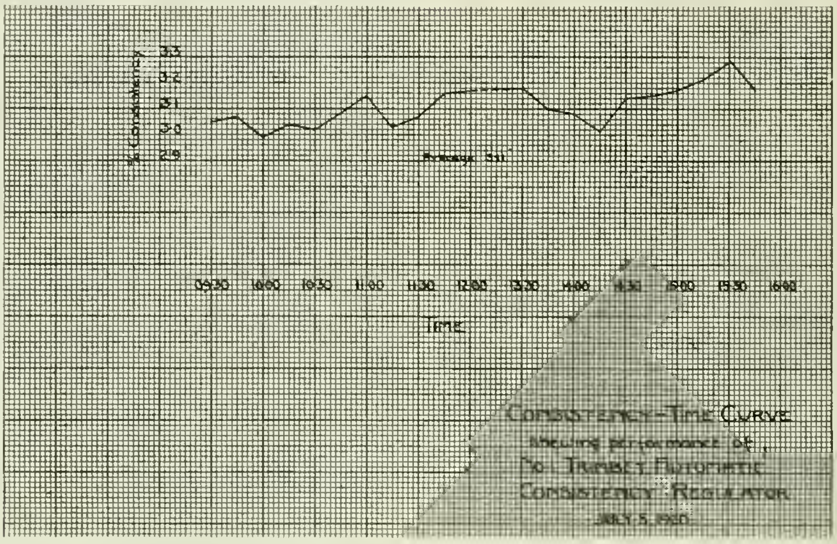

Fig. 3

HOW TO LINE UP A BOARD MACHINE.

In reply to the question on this subject in a recent number of the Pulp and Paper Magazine, the Editor has received the following:—

"We are interested in the question on lining up a board machine. This as you will probably appreciate requires a man of training and experience and is a matter which cannot be very well described in a letter, and we would strongly advise that the party who desires this information, if they actually require same, employ someone of experience to carry on the work, as it will undoubtedly be to their advantage.

Of course the basic principles of lining up any machine is to draw a line either through the centre line of the machine, or at any point parallel to it and square up all of the parts of the machine to this line. The line is usually run under the machine when same can be conveniently done, or if not over the top of the machine and plumb lines dropped, but the accuracy required should not be left to a novice, and we believe it can be best trusted to a man who has had experience. If we were to give actual detailed description of each and every move in the process, we do not believe results could be accomplished by an amateur, as there are certain parts on every machine, which require adjustment which only a competent experienced man is able to accomplish."

STRENUOUS WORK SEEING SWEDEN.

(Extract from letter from Mr. EDWARD BECK.)

"We arrived here yesterday after a week of strenuous traveling through Government and private forests. Our days have been very full. Here is a sample one: Arise at 5 o'clock, coffee and rolls served in room; motor about ten miles where we pick up the Forestmaster and are given additional coffee; motor some more to the Forestmaster's home which we reach at 10 o'clock and are given an elaborate "breakfast"; motor again with excursions into the woods running from ½ to 2 miles in duration; "lunch" about four o'clock in the afternoon and return to motor and tramping; arrive at another Forestmaster's about 11 at night where we get supper and a bed at about 12.30. Not every day is quite so full as that, but nearly so. One night we rode seventy miles after dinner at seven o'clock. It is quite light here at midnight so that night-driving involves no additional danger. We are being well treated everywhere and shown what there is to see. We went all over the Kramfors Company plants here today and leave tomorrow morning at ten o'clock for additional woods inspections."

A series of articles by Mr. Beck on "Forestry in Sweden" will begin in the next issue of the Pulp and Paper Magazine.

Another Successful Summer Meeting

On the 14th of June about thirty members and guests of the Technical Section, gathered at Montreal and departed for Three Rivers in two special sleepers. On Wednesday morning an entertainment committee consisting of C. King, J. T. O'Reilly and C. D. Jentz, Jr., representing the paper mills of that place appeared at the station and conducted the party to the hotel for breakfast. On extremely short notice because of the unable uncertainty as to whether certain features could be included, they had arranged a most enjoyable program.

A short walk from the hotel brought the party to the plant of the Wabasso Cotton Co., and a very thorough inspection of this excellent factory was made. The process was seen and explained from the opening of the bales of American and Egyptian cotton until the fibres were finally seen in beautiful snow white sheets, pillow cases and dress goods done up in neat and attractive bundles ready for use. An interesting feature was the electric boiler equipment which is used to maintain a steam pressure while manufacturing operations are stopped. It was pleasant to observe that the plant was running almost at capacity.

A Fine Pulp and Paper Plant.

The next point of interest was the new pulp and paper plant of the International Paper Co., which was described in the Pulp and Paper Magazine of June 9th. The officials in charge were most courteous and painstaking in their efforts to see that everyone in the party saw every point of interest and many new features of mill construction were seen and explained. It was the general opinion as expressed by many of the visitors that this plant is the last word in paper mill design and will prove to have an exceptionally low cost of production and maintenance. As the Vice President of one of the largest Canadian companies remarked: "It is a wonderful advantage for a company to have the opportunity of laying out the whole mill from the beginning on clear ground."

Since the information was collected for the descriptive article referred to it was noted that the pump house and filter beds are now practically complete, the third barking drum is in operation, a second pulpwood stacker has been erected, the foundations for the magazine grinders are set and the tank room is well under way, the paper machine room is housed in and the plant in general presents a much more finished appearance that at the time of the last visit of the editor. Paper makers will follow with interest the means employed by the designing engineers to obtain correct ventilation of the machine room and evacuation of the moist air without the use of hoods for the machines. From the explanation of the Superintendent of Construction their plan seems quite feasible.

Civic Luncheon a Delightful Function.

The party returned to the hotel at one o'clock and were received informally by civic officials and were entertained as guests of the City Council at a luncheon which was thoroughly enjoyed by more than forty guests. The committee had seen to every detail so the affair went off without a hitch. The chairman of the Entertainment Committee, Major Clement King of the International Paper Company, welcomed the guests to Three Rivers and expressed the pleasure of the companies at being honored with a visit from the technical men. He mentioned the exceptional advantages of the geographical position of the city and the very cordial cooperation and encouragement always given to industrial enterprizes by the city and the Province. He then introduced the acting mayor, Mr. Alfred Gouin. Mr. Gouin expressed regrets of the mayor at not being able to welcome the visitors but voiced the pleasure of himself and the Council in having the technical men visit the city of Three Rivers. He, too, emphasized the striking transportation facilities offered by the location of the city and ventured to predict that before many years Three Rivers will be the industrial centre of Canada.

The chairman then called on Mr. Percy B. Wilson, President of the Canadian Pulp and Paper Association who remarked on the very happy relations between the authorities and the industries in Quebec and expressed his appreciation of the delightful entertainment that the committee and the city had provided for the visitors. Mr. George Carruthers, Chairman of the Technical Section also was called on for a few remarks after which the Honorable Jacques Bureau, Representative of the district in the Federal House of Commons addressed the gathering. He remarked on the rapid growth of Three Rivers from an obscure village to a prosperous city of 30,000 inhabitants. He stated that the St. Maurice River represented greater potential horse power than Niagara Falls, and with the great forests of this water shed and the advantages of location for rail and ocean freight shipment and the presence of a contented, dependable and industrious population, the district—and he wished to speak for the whole valley—is sure to develop into one of the great industrial centres of the Dominion. The speaker dwelt at some length on the desirability of the Governmental policy which safeguards and encourages industrial development and individual enterprise. He spoke with delightful humor and his speech was not only interesting but very instructive.

Following the lunch a group of automobiles were ready to take the party on a sight seeing trip. These were supplied by the Chief of Police who led the procession, C. Jentz, J. Fortin, T. R. Argal, L. Morissette, G. H. Giroux, Dr. Germain and the Légaré Automobile Company. Most of them were driven by their owners. This feature was the contribution of the Board of Trade to the visit of the Technical Section and a number of other automobiles were on hand for the use of the party but were not required. This attention from the business men is but another evidence of the hearty cooperation of the people of Three Rivers in their desire to be accommodating and to work together for the good of their city. It may be stated here that the Chief of Police Emile Berthiaume was "the life of the party" during the trip around the city. At Cap Madeleine a visit was made at the plant of the Tidewater Shipbuilding Co. where the party saw under construction what were said to be two of the largest marine engines ever built on this continent. The visit to this enormous plant was certainly most interesting. On the return journey a stop was made at the plant of the Canada Iron Foundries, Ltd., where the visitors saw the excellent facilities of this company for making all kinds and sizes of castings. On the day of the visit the plant was running through an order of several sizes of iron pipe. An interesting point brought out in this visit was the successful use of concentrated waste sulphite liquor as a binder in making the cores. This material is a by-product of one of the Canadian sulphite mills.

After supper in Three Rivers the party again took to the cars which had been parked at the station and left by the evening train for Grand'Mere. Here the Reception Committee under the Chairmanship of Mr. O. F. Bryant welcomed the party and a number of the visitors enjoyed a stroll about the town before retiring.

A Busy Day At Grand'Mere.

Thursday was a busy day for the visitors and every moment was profitably employed. After breakfast served in the diner, which the C. P. R. officials very kindly sent along with the sleepers, the visitors were divided into groups according to the parts of the plant to which they desired to give most attention. Information sheets had been distributed the day before which assisted the committee in arranging for guides and planning the trips through the mill so as to give the visitors the best use of their time. Interest naturally centered largely about the new high speed machines built by the Dominion Engineering Works and driven by the Harland Patent Interlock, speed controlled drive. An accidental break of the paper on one of the machines might have been staged for the entertainment of the visitors as it showed how a number of the difficulties involved in such a break can be handled with the electric drive. It is certain that a mechanically driven machine could not have been so easily and conveniently handled as was the case at this time. A number of the special features of the machine and the drive which have been already explained in previous articles in the Pulp and Paper Magazine were brought into play and furnished an exceptionally interesting demonstration for the members of the Technical Section.

Another feature of the mill which attracted a great deal of interest was the very well arranged and conducted department for wrapping, billing and shipping the huge rolls and bales of newsprint. Many of the visitors were also greatly interested in the wonderful way in which the Laurentide Company handles the social service work connected with such a large enterprise and the delightful opportunities for healthy recreation which are provided. After luncheon in the diner, for which the C.P.R. had very courteously provided special menus in honor of the Technical Section, the visitors did just as they pleased with regard to the manner of spending the afternoon. Some went back to the mill to investigate special features, others played tennis, some played golf, or watched those at play and some just sat around and enjoyed a quiet chat with a friend. During the afternoon a special golf match was played and this was followed by many of the fans.

In the evening the Laurentide Company entertained the Technical Section at dinner at the Laurentide Inn. While the guests were gathering and during part of the dinner the Laurentide Band provided an exceptionally fine program which was greatly appreciated and enjoyed. Between the courses of the dinner Mr. George Carruthers, Chairman of the Technical Section called for speeches from President Wilson, of the Pulp and Paper Association; Mr. George Williamson, President of the Technical Section of the Pulp and Paper Industry who extended a cordial invitation to attend the fall meeting of his association at Washington, Wilmington, Philadelphia and York Haven next October, and on Mr. John Stadler of the Belgian Industrial Company. In moving a vote of thanks to the Laurentide Company, the Belgian Industrial Company, and the industries and authorities at Three Rivers, Mr. J. N. Stephenson remarked that this was the sixth summer meeting of the Technical Section and that there had never been a wet day nor a dry meeting. The motion was heartily seconded by Mr. R. S. Kellogg, Secretary of the Newsprint Service Bureau, and was unanimously and vociferously passed.

The Industrious Belgians.

The special cars were taken to Shawinigan Falls on the evening train where the Reception Committee under Mr. Meerbergen and Mr. Chabot had provided refreshments in the meeting room in which the party gathered for a session of story telling and good fellowship until quite a while past sundown. On returning to the cars where a few of the party had retired, a self appointed quartette entertained (?) the visitors with a song, of which the editor, after much difficulty, succeeded in obtaining a copy. It runs as follows and is supposed to be sung to the tune of "Bubbles":

(1)

In the big mill,
The paper mill,
I'm working all day long,
Trying to make a decent sheet,
Believe me it is no song;
There's always something the matter,
Makes the boss mad as a hatter.

Chorus.

I'm forever having troubles,
Petty troubles all day long,
First its the screens, then the paper breaks,
Get off again the weight is wrong;
Always something doing,
Can't rest any more,
I'm forever having troubles,
And worse than I've had before.

(2)

If you make pulp,
You have no cinch,
You'll know what troubles are,
Making sulphite, making groundwood,
We have to suit your whim,
And if we don't do it always,
You lobsters refuse to use it.

Chorus.

I'm forever having troubles,
Petty troubles all day long,
First its the gas, then the pressure falls,
Get that too high and the yield is small;
Always something doing,
Can't rest any more,
I'm forever having troubles,
And worse than I've had before.

Naturally the party was not in motion very early on Friday morning but was in plenty of time to enjoy a delightful breakfast at the Cascade Inn as guests of the Belgian Industrial Co., and after that the visitors were conducted in pre-arranged groups by competent guides through all the departments of the mill. A great many changes have taken place since the Technical Section visited Shawinigan Falls four years ago and the guests were interested and entertained by the explanations of the new construction work and the results which were being obtained. Many interesting features were described and the visit was most instructive.

The party again gathered in the meeting room when an address of welcome was made by Mr. Maurice Neilson on behalf of the company, and this was followed by a few remarks by Mr. T. B. Nuttall, of the firm of Bentley and Jackson, of England, and a member of the Technical Section of the British Paper Makers' Association. Mr. Nuttall gave Canada credit for having shown the way in regard to the organization of the Technical men in the industry and stated that the organization, of which he was a member, had followed largely the lead of the Canadian Technical Section. He observed that in his country as well as in Canada there was need for more and better elementary education and that the British Technical Section is planning to offer scholarships and to assist in every way the better training of paper makers along the lines of their vocation. He closed his remarks with a very cordial invitation to visit the meetings of the British Technical Section to be held in London.

The visitors were treated to an enjoyable auto trip around the city, again led by the chief of police.

A delightful outdoor luncheon was then served on the lawn and verandah of the Cascade Inn, and then the party left in their special cars by the afternoon train for Montreal, having finished what will be remembered as one of the finest meetings of the Technical Section which has yet been enjoyed.

CENSUS BUREAU REPORTS ON PAPER PRODUCTION.

The preliminary report of the census bureau on manufactures comparing the number of plants and the value of their products for 1919 and 1914 gives the number of paper and wood pulp plants reporting as 713 in 1919 as against 718 in 1914. The value of the 1919 product is given at $789,548,000, as compared with $332,147,000 in 1914. Other branches of the industry are reported as follows: Paper bags, exclusive of those made in paper mills, 75 plants as against 59 in 1919, and valued at $47,264,000 as against a 1914 valuation of $17,603,000; paper goods not otherwise classified, 305 plants, a decrease of five in five years, with a value of product of $101,473,000 as against $48,.871,000 in 1914; paper patterns, 19 plants as against 25 in 1914, and a product value of $1,528,000 as against $3,026,000 in 1914; pulp goods, 42 plants as against 24 in 1914, and a product valued at $24,257,000, as compared with $14,483,000 in 1914; wall paper not made in paper mills, 49 plants, a gain of one in five years, with a product valued at $23,095,000 as against $15,887,000 in 1914. The preliminary report is made to correction.

CHANGES FREIGHT RATES ON PULP AND PAPER.

The Interstate Commerce Commission has rendered a decision in the case of the rate on newsprint paper in carloads from Sault Ste. Marie, Ont., Fort Frances, Ont., and manufacturing points in Minnesota and Wisconsin to destinations in the west and southwest, finding existing rate unduly prejudical.

The commission has, pending hearings, suspended proposed increases in carload rate on pulpwood from South Carolina to Canton, N.C.

INDUSTRIAL FILTRATION OF COLLOIDAL SOLUTIONS.

The filtration of colloidal solutions, or even of suspensions, by current methods, presents great difficulties on account of the gradual clogging up of the pores of the filter and the accumulation of the residue. This requires a gradual increase in pressure; but the ultimate pressure attained is limited by the strength of the filtering cloths. These cannot withstand very long a pressure of 6 kilos per square centimeter (about 80 lb. per square inch), and require to be renewed quite frequently. Monel metal cloth, according to Gerhard Smith, cannot be made fine enough, and moreover it wears out quite rapidly. A further disadvantage of filter presses is the fact that they work intermittently and the deposit must be removed after each operation.

The main characteristics of Plauson's ultrafilter are that it works under very high pressure, which may reach 200 atmospheres (about 3,000 lb. per square inch), and that its operation is continuous.

The filtering surface is strengthened by means of a perforated metal cylinder which is surrounded by a series of metal gauzes of rather fine mesh. The effective mesh can be varied by suitably adjusting the pressure on the gauzes. As this is not yet sufficiently fine for filtering slimes or colloidal solutions, the pores must first be obstructed by means of a water suspension of the material to be filtered, or of asbestos, cement, plaster, etc.

Inside the cylindrical space in which the mass to be filtered is introduced, there is a rotating helical screw of such a diameter that the thickness of the deposit on the filter may be maintained constant at any desired thickness. The deposit becomes heavier as it descends through the apparatus and can be discharged at the desired consistency.

The liquid passes through the filtering medium (composed of the wire gauzes and the deposits) at a constant speed, since the thickness of the deposit, which constitutes the greatest obstacle to its passage, is also constant.

The wire gauzes can be replaced by perforated cylinders having preferably longitudinal slots.

Another method of constructing a filter capable of withstanding very high pressures consists in winding several layers of wire around a perforated cylinder. The liquid is forced to flow around the interstices between the wires, and these soon become clogged with the material to be filtered, which then acts as a filtering medium. By using a wire covered with cotton, asbestos, cellulose or paper, exceptionally active filters are obtained. The filters can also be impregnated with rubber, cellulose esters, etc.

British patent No. 155,834 (not yet accepted) of H. Plauson, Hamburg and J. A. Vielle, Westminster, shows the construction of the ultrafilter as described above.

One of the numerous uses to which this filter can be put is for the purification and sterilization of water. The sizes of the pores of the filter can be adjusted so that it will hold back not only the colloidal impurities, but even the bacteria, thus doing away with the necessity of the large settling tanks which are used at present.

A. P.-C.

(Dr. J. H. Frydlender, in La Revue Des Produits Chimiques, **24**, 181-2, March 31, 1921).

News From Europe

(A digest prepared for Pulp & Paper by Dr. Paul Bartholow.

The Market Position in France.

There seems reason to believe that the liquidation of stocks is practically finished. The volume of actual business, however, hardly warrants an optimistic feeling, for such business as is recorded mainly reflects an expectant attitude. The difficulty is to account for any "business" where all are vociferously braying, "nothing doing". The truth is that paper is consumed in ever increasing quantities; somebody, therefore, must be a buyer, but who is he? According to La Papeterie, there have been very large dealings in news print. The price is not revealed, but it is alleged that the Scandinavian countries are delivering news print in Paris at such figures that it costs 130 francs c.i.f. French port. Meanwhile French makers are offering paper on the same terms, which means that the consumer must pay four times what he did before the war. The manufacturer, on the other hand, who sells at such a figure is not meeting the cost of production. —LA PAPETERIE, May 10, 1921.

The Paper Trade and Prohibition.

Norway and Finland recently passed anti-alcohol laws which have exerted a decided check to the export trade of these countries. As the Papier-Zeitung says: "For the wood and paper-producing countries of the North, whose anti-alcohol rules have proved stumbling-blocks to the entry of French wines, the market in France is now due for a reprisal. In April France raised the coefficient of increases on the imports of wood and paper (with the exception of news print). In this way Finland was chiefly affected. Duties on goods imported from this country are four times as high as the duties hitherto in effect. The result is that, whereas Swedish paper bears a duty of 400, 300, and 600 francs, the same grades of Finnish paper pay a tax of 1800, 1200, and 2400 francs a ton. Sweden, it is to be noted, admits French wines. The outlook in Finland is therefore darker than ever, because in addition to its liquor policy it is undergoing a disastrous change caused by the world's crisis. In fact French markets are practically closed to Finnish wood and paper. Formerly France took about 26,700,000 francs' worth of these products from Finland. As Finland has no commercial treaty with France there is no immediate prospect of a lower duty on Finnish goods.

The Paper Trade in Italy.

The reading of Italian trade journals is depressing. The impression left is that business and industry are both discouraged by political conditions. In a leading article the Industria della Carta observes that "in the actual circumstances created as a consequence of the war it is no longer possible to draw a distinction between politics and that complex of phenomena, both technical and economic, which constitute the great and throbbing life of industry, commerce and labor."

The journal proceeds to dwell upon the absurdities and difficulties of the present European situation. To anticipate a general return of confidence would be premature with so many uncertainties ahead; it is evident from the cautious manner of hinting at these uncertainties that they must be too serious to divulge. Another factor, also, is the endless negotiations over the division of the old States of Europe. Formerly after wars, Europe possessed statesmen who had brains and knowledge and were not obliged to have one ear always at the United States megaphone. The consequence was that Europe then made peace and settled down, and avoided the anarchy which, under different names, now extends from Warsaw to Rome. This "anarchy," says the Industria is due to the spineless acquiescence of ministers who are too weak to govern." Such men deliberately accept power "which they have to renounce, while the apparent calm produced by their feeble and futile characters, really conceals the germs of revolution."

There is a lack of "harmony" or, in other words, anarchy, in Italy and other countries, a lack of harmony between capital and labor, but in Italy greatly intensified by the barren legislation of the Chamber of Deputies. A new Chamber is now elected. Will its work be an improvement? No one can tell, but it is clear that revolution may spoil the efforts of politicians who are trying to find a new industrial formula. "The industrial classes, the thousand of citizens who live by trade, the laboring classes expect from the Chamber a work of restoration and speedy return to the normal."

The Trade Understanding Between Italy and Czecho-Slovakia.

As compared with former times the business between Italy and the old Austrian states is conducted with a maximum of official interference on both sides. All this is made clear in the terms of the "commercial convention" with Czecho-Slovakia. The exchange of goods is always "contingent" upon various things—stability (for which obviously there is no guarantee), probable growth of industry, etc. For example, Czecho-Slovakia undertakes to deliver 50,000 quintals of chemical wood pulp to Italy provided production is sufficient, and 100 car loads of news print and 5000 tons of kaolin under the same conditions—in other words all or nearly all trade is contingent. Payments may be made in crowns or lire at current rates, but since the Czecho-Slovak crown has fallen to about a cent and a quarter business is doomed to partial or "contingent" failure. Such is the result of rash and foolish experiments in politics.—INDUSTRIA della CARTA, May 1921.

THE FAVORED TREE.

By F. H. MASON.

Had it been destined I should be a tree,
With power to choose the kind of tree I'd be,
I would not be an oak of massive spread—
The after life as furniture I'd dread;
Nor a mahogany—the polished state
Of later years would be too tame a fate;
Nor would I be an apple or a pear,
Supplying fruit as just a passing fare.
No. I would be a spruce of northern wood,
And I would be cut down, while young and good,
And mashed to pulp. And in the paper state
The Muse's dreams I would perpetuate.
Philosophers and writers of all kinds
Would trust to me the secrets of their minds;
And to posterity I would hand down
The brightest gems set in a golden crown.

Mr. McCarthy's report indicates that owners of pulp wood timber can come back after twenty-five years, secure more timber than was taken in the first cutting, and still leave a better stand than was left after the first cutting, if they protect their cut over lands from fire.

Canadian Vegetable Parchment Company, Ltd.

By A. R. R. JONES.

The Canadian Vegetable Parchment Company, Ltd., is in the unique position of having the only mill of its kind not merely in Canada, but in the British Empire. At its mill at Merritton, Ont., it manufactures genuine vegetable parchment. This is advertised under the trade name of "Purity Parchment"—and the name is a good deal more apt than are the trade names one sometimes sees given to other articles of commerce, inasmuch as it is a just description of the quality of the product which the company turns out.

For no indifferent paper comes from, or, indeed, is made in, the Canadian Vegetable Parchment Company's plant. The finish is the same each and every day—there is no change in it whatever, no matter what the cost of commodities may be. It is this resolute adherence to the highest possible standard of quality in its product that has given the company in the comparatively short time during which it has been operating —for construction of the Merritton mill did not commence until August, 1919—a reputation which many commercial concerns, much longer established, might well envy.

The plant at Merritton is exceptionally well planned and constructed, the arrangement of the various manufacturing units being notably well devised, while the machinery is all of the most modern and efficient kind. The buildings are of brick, stone and concrete construction. The shipping facilities are all that could be desired, sidings of the Grand Trunk, Canadian Pacific, Canadian National, and Niagara, St. Catharine and Toronto railways running right by the plant. Further, the mill has the advantage of an unexcelled water system from wells of water of a most suitable quality for the purpose required.

The company has under construction a second parchment machine, and this, when installed, will double up the present producing capacity of the plant which is 2,000 tons per year of genuine vegetable parchment. It is gratifying to learn, as the writer did in conservation, this week, with Mr. C. V. Syrett, the company's president, that the plant at Merritton is running night and day, with orders seven or eight weeks ahead. The parchment paper it produces is already favorably known in Australia and New Zealand as well as in this country in which rather more than fifty per cent of its output is used.

The parchment paper produced is used for the purchase of wrapping meat, poultry, butter, oleomargarine, lard, cheese, ice cream bricks biscuits and so forth. In this connection, it may be noted, as a satisfactory evidence of the manner in which the Canadian trade is backing up their Canadian enterprise, that the imports of parchment paper are sensibly diminishing each month. At one time nearly all the parchment paper used in Canada was imported from overseas, but, during the war, this trade became diverted from Europe and passed under the control of concerns in the United States. Frequently in the columns of this magazine, emphasis has been laid on the desirability of the use, by our Canadian manufacturers, of "Made-in-Canada" paper only. It ought to be self-evident that such manufacturers should give to the only Canadian concern making genuine vegetable parchment paper the same preference that they rightly urge the public generally to give to the commodities that they themselves manufacture.

This class of paper is difficult to manufacture and necessitates highly scientific operation. From the very first, the sheet produced was beautifully white, clean and strong and evoked from the Canadian trade hearty expressions of satisfaction, and, as has been stated, the company is resolved to adhere to the high standard of quality that it has set for itself. It should be mentioned that, quite recently, this parchment paper has passed quite a severe test at the hands of the Australian Government. In that country, more severe tests on parchment are the rule than obtain in any other, and samples of "Purity Parchment" sent to the Australian Government have called forth a very favorable report on its quality. Nor is this, in any way, surprising, for in the operation of its plant, the company imposes the most stringent possible tests at every step in the process of manufacture, as well as subjecting all raw materials to the most rigid examination.

The officers and directors of the company are as follows: Mr. Charles V. Syrett, president; Mr. Lauren H. Gardner, 1st vice-president; Mr. W. H. Howe, 2nd vice-president; Mr. Leo E. Charles, secretary-treasurer; and the other directors are Messrs. Charles F. Hubbs and H. J. Severance.

TUB SIZED, LOFT-DRIED PAPER.

Many buyers of paper have heard their Printer say, "This sheet is tub sized, loft-dried paper." There are also many who do not understand what the words really mean.

In the first place, paper is sized with a glue solution made from hides. This process gives to the paper a writing surface and also holds the fibres more firmly together, thus making the paper stronger.

There are two ways of sizing paper, says "The Crest":

The size in the cheaper papers is mixed with the pulp before it goes over the paper-making machine and, in many cases, dries in hard lumps in the paper when going over the drying rolls.

The tub sized sheet passes through a tub of size after the paper is made and, consequently, receives an even coating of the size on the top and bottom surfaces This process insures a better surface and a stronger sheet.

There are also different ways of drying paper. The cheaper papers are dried as they are made on the machine. Others are air dried, passing on festoons until dry. The loft-dried sheet is hung up in lofts for weeks until thoroughly matured. This latter operation also makes the sheet stronger and gives it the crackle so pronounced in high grade bond and ledger paper.

Merton R. Sumner has been appointed Chief Engineer of Arthur D. Little, Inc., Chemists, Engineers and Managers, Cambridge 39, Mass. Mr. Sumner was formerly Chief Engineer for New England of Fred T. Ley & Company, Inc., in charge of about 125 construction projects and more recently was Chief Engineer of the Fuller Industrial Engineering Corporation, a subsidiary of the George A. Fuller Company.

General News

(Clipped from the Bulletin of American Paper and Pulp Association.)

Superintendents' Association Prospering, Has Fine Convention.

Important steps toward improving the field of opportunity for service to the paper industry by the superintendents were discussed during the annual convention of the American Pulp and Paper Mill Superintendents Association, in its three day session at the Waldorf-Astoria, New York, June 3 to 5.

Important discussions of mill problems, entertainment of the highest type, and plans for future cooperation to achieve greater efficiency in the mills were some of the features of the three days of meetings, and the association not only discussed mill problems, but also plans for making the association itself more helpful to the industry.

John H. O'Connell, of the King Paper Company of Kalamazoo, was advanced from first vice-president to the presidency, succeeding Fred C. Boyce, of Wausau, Wis., and other officers elected were:

First Vice-President—George K. Walker, Glens Falls, N.Y., of the Finch-Pruyn Company.

Second Vice-President—Nelson R. Davis, S. D. Warren Company, Cumberland Mills, Me.

Third Vice-President—A. O. Rolfe, Champion Coated Paper Company, Hamilton, O.

Treasurer—Peter J. Massey, W. F. Hall Printing Company, Chicago.

The association has become such a busy, important organization, that Mr. Massey was unable to undertake for another year the duties of Secretary, and a successor will be chosen by the executive committee.

Six divisional chairmen were elected as follows:

New York Division—C. T. Jewell, St. Regis Paper Company, Herring, N.Y.

Michigan Division—Edward T. A. Coughlin, Monarch Paper Company, Kalamazoo, Mich.

Northwestern Division—R. J. Cunningham, Northern Paper Mills, Green Bay, Wis.

Miami Valley Division—A. O. Rolfe, Champion Coated Paper Company, Hamilton, O.

Northeastern Division—N. R. Davis, S. D. Warren Company, Cumberland Mills, Me.

Canadian Division—W. A. Anderson, Kinleith Paper Company, Ltd., St. Catharines, Ont.

The Friday evening program was devoted to entertainment, while the Saturday evening banquet was made notable by an address on Americanism by United States Senator Frank Willis, of Ohio, who, as part of his address, urged the restriction of immigration to give American workmen a chance to work, and thus relieve the problem of unemployment.

The convention sessions began Friday morning, and continued through Saturday afternoon, with various problems of the mill superintendent discussed by speakers and from the floor as well. Sunday's program was one of entertainment.

Making National Study of Forest Problem.

Elaborate plans are being made by the Chamber of Commerce of the United States for the facilitation of the investigations by its committee on a forestry policy, on which the paper industry is represented by Dr. Hugh P. Baker, secretary of the American Paper and Pulp Association. The committee will hold a meeting in New York June 27 and 28, to discuss forestry problems in the east, and will probably hold a meeting in the region of the lake states about July 19 to meet those interested in that section. The committee will then make a tour of investigation to the Pacific coast, leaving the Chicago meeting for the northwest. The trip is the first ever made by any investigating committee of the Chamber of Commerce, and is evidence that the Chamber appreciates the importance of this problem, in whose solution the paper industry is taking an important part.

Conditions in the Paper Industry Abroad.

The French decree of June 16, 1920, relative to the prohibition of importation of pulp for news print paper, and of October 23, 1920, regulating import of paper in rolls have been annulled.

American paper contracts for Brazil delivery have suffered from German competition in addition to the problem of exchange; for German exporters are offering some grades 60 per cent below New York quotations, though it is doubted by some whether they can deliver according to contract. The result, however, has been cancellation of some American orders.

The manufacture of paper in Argentina is described in a report by Trade Commissioner Philip S. Smith, who says it is confined largely to wrapping, writing and colored papers and cardboard, all of which are fairly protected by import duties. Some newsprint has been made also. Importations of chemical pulp total 25,000 tons annually, and only one mill is known to be making pulp locally, this being from a species of willow on the islands of the Parana river delta. Pulp can be made from raw materials in the republic, but not in competition with the product of Sweden, Canada or the United States.

Describes Paper Mill Conditions Abroad.

The situation in the pulp and paper industry abroad is worse than in the United States and Canada. Mills have large stocks of both raw and manufactured materials, are cramped for capital and have no orders; consequently, they are almost without exception operating on short time," says Arthur C. Hastings, former president of the American Paper and Pulp Association, in an analysis of the foreign paper situation, in giving his conclusions based on his recent trip abroad. His report was written for the Writing Paper Manufacturers Association, but was so filled with interesting comment that it is herewith abstracted for the industry at large. He says in part:

"Under normal conditions the pulp and paper made in Norway, Sweden and Finland find a market in England, France and Germany, with a small percentage sold in the United States, but now both the paper mills and dealers in these countries, with the exception of Germany, are overstocked with pulp and paper bought on a high market.

"Germany is the 'fly in the ointment' and all the exporting nations are filled with forebodings as to what she will accomplish in her effort to 'come back.' The possibilities, as they see it, are as follows:

"All valuations in Germany that enter into the cost of living are about four times the pre-war rate. As the present value of the mark is 1½ cents in our money, or one-sixteenth of par value, and as the purchasing power in Germany is one-quarter of normal, a United

States dollar in Germany would, when converted into marks, have the same purchasing power as $4 has in this country. If, for example, the German paper maker, in order to dispose of his produce, is obliged to offer machine finish at 4 cents per lb., f.o.b. his mill, the 4 cents in our money has a value of 16 cents in his country when converted into marks, and on this basis he is really getting a splendid price for his produce, although sold here at a price which on its face appears to be ruinous. In other countries where the difference in exchange is not so much, the advantage to the German is not so great, but almost without exception it is sufficient to insure a price so low that no other country can profitably compete.

"In considering this situation it should be borne in mind that the German Government, either directly or indirectly, has subsidized all industries, which in effect reduces the cost of production, and as a further assistance to this end, has recently passed a law authorizing the cutting of wood for paper making from the German forests for a period of two years at a low price per ton of pulp. I understand it costs them 900 marks or at present exchange $14.00."

Descibes Testing Methods for Papermen.

Three recent publications of the Bureau of Standards relating to paper may be secured of the Department of Commerce, as follows:

Circular 107—The Testing of Paper, Feb. 12; 37 pages, 18 text figures. 10 cents.

Technological Paper 187—A study of test methods for the purpose of developing standard specifications for paper bags for cement and lime, by Paul L. Houston. March 21; 19 pages, 54 text figures. 5 cents.

Technological Paper 189—Method for differentiating and estimating unbleached sulphite and sulphate pulps in paper, by R. E. Lofton and M. F. Merritt. April 4; 18 pages. 5 cents.

Cost Association Already Beginning Plans for Fall Convention.

At a meeting of the Executive Committee of the Cost Association of the Paper Industry held at the Nyassett Club, Springfield, Mass., on May 17, it was definitely decided afte some discussion to hold the next convention of the Cost Association in Chicago, Ill. on Oct. 6 and 7, provided that these dates did not conflict with any other arrangement made by the secretaries of other associations. It having been ascertained that such was not the case, these dates have been duly decided on. The Secretary-Treasurer will be glad to receive any suggestions as to speakers for this convention. Speeches will be limited to about twenty to thirty minutes apiece, in order that there may be plenty of time for discussion of each subject when the speaker has concluded his remarks.

In the future the Cost Association will hold two conventions a year, one in May and one in October. Notices will be sent out shortly to all members proposing that the by-laws of the Association be changed to this effect.

Chester M. Clark, formerly head of the Corporation Department of Stone & Webster, Inc., and during the war secretary of the underlying company at Hog Island and assistant to Mr. Matthew Brush, the president of that corporation, has been elected treasurer of Arthur D. Little, Inc.

HISTORY OF THE STURGEON FALLS MILL.

(From the Spanish River News.)

There is always something interesting about the birth of a new industry and with it the establishment of a new town.

It is said that in the old days a politician in looking over the map of the province of Ontario took his indelible pencil and marked a line from Sault Ste. Marie through Sturgeon Falls, which at that time was nothing but a mass of heavy timber. This he pointed out should be a part of a transcontinental railroad. To-day the C.P.R. is probably built on this line.

The picture below is one of a saw mill built in the early eighties on the site of the present wood room. Some of our old settlers will recognize this mill as that of Martin Russell.

The story goes that in 1882 the lot was entirely covered with timber and included the falls belonged to James Holderidge, one of the first pioneers of this town. He sold the lot to John Clark, father of J. A. Clark, of this town. The property was sold with the condition that a saw mill would be put up at the falls which would use the power developed at this point.

Mr. Clark had brought his portable steam mill with him and as he wanted to use his own mill he sold the site of the falls to Renalder McConnell in 1883. Evidently he had Mr. Martin Russell in mind when he bought the property, for Martin Russell was the man who put up the first mill. Mr. Hugh Baxter bought this mill in 1886. The mill was then sold to Heath and Pageant, of Huntsville. They in turn sold the whole site and mill to the Imperial Paper Company, which was first under the management of a Mr. Brimmer. Later the mill was managed by Mr. Craig, who for a long time was a resident of this town. After a time the company became insolvent and the banks took the mill over. Shortly after this very little work was done at the mill for several years.

Many of the old settlers of this town will tell you that in spite of the fact that the mill was practically doing nothing, the whistle blew as merrily as it does to-day.

The Spanish River Pulp & Paper Mills, Ltd., bought this mill a few years ago and with experienced men cleaned up the mill and started the wheels turning over. Many replacements and improvements have been made since the present ownership.

The new and up-to-date paper machine, the new additional boilers and the new grinder room to be completed, together with the power development at Smoky Falls is a sure sign of progress both for the mill and the town. The increase in the number of new houses also shows that we are outgrowing our little town and must keep pace with the developments at the mill.

IMPORTANT WOOD BULLETIN READY SOON.

The pulpwood consumption under preparation by the United States Forest Service in co-operation with the American Paper and Pulp Association and the Census Bureau, is rapidly approaching completion, though the collection and compilation of the statistics has been a difficult task. The preliminary statement already sent to members of the association in a special letter from the association offices shows that the 1920 consumption exceeded the greatest previous record by *36,000 cords, or nearly 12 per cent and in value exceeded the amount paid in 1919 by $29,000,000 or 19 per cent. It was 37 per cent over the amount paid in 1918.

Technical Section

REVIEW OF RECENT LITERATURE.

A-13; A-15. Committee on Chemical Standards. The present ball mill method of determining the strength of sulphite pulp does not give comparable results when performed by different operators, and it is likely that the method produces results which may be considered more directly as a measurement of the effect of beating than as a true determination of sulphite strength. It is recommended that the question be referred to a committee on sulphite pulp for consideration and that this committee develop a method which wil give a true indication of the actual strength of sulphite pulp. The coal tar dyestuffs marketed in Canada are of very variable quality and it is recommended that the question be referred to a committee on sulphite pulp for consideration and that this committee develop a method which will give a true indication of the actual strength of sulphite pulp. The coal tar dyestuffs marketed in Canada are of very variable quality and it is recommended that a special committee be appointed to study the entire question of dyestuffs in relation to their use in the paper manufacture. It is recommended that a detailed study be made of methods which can be presented for adoption as standard for grading newsprint and wrapping papers, each of the following factors being taken into consideration—weight, finish, cleanliness, strength, formation, thickness, color, moisture. The methods officially adopted for the analysis of clay filler (water, color, fineness, elutriation, and plasticity) are briefly described.

A-15. Committee on Testing Moisture in Pulp. It is recommended that a committee should be composed from the English, American and Canadian Technical Sections and have power to decide as to which of the strip, disk, or wedge method of testing moisture in pulp, or if all three should be used in matters of testing dry pulp in rolls or bales.

A-15. Testing Sulphate Pulp for Strength. K. G. WILEN. **Pulp and Paper,** xix, 68-72 (Jan. 20, 1921). Address before Technical Section, Canadian Pulp and Paper Association.—A. P.-C.

B-3. Protecting Popler Trees from Borers. Pulp and Paper, xix, 30 (Jan. 6, 1921). According to the U. S. Dept. of Agriculture, the aspen borer can be controlled by either of two methods. The first consists in destroying the insect by cutting the brood trees, and the second, which is not practical in the forest but is applicable to shade trees, is the application of carbolineum or creosote to the egg scars. This should be done in October after the adults have deposited their eggs.—A. P.-C.

B-0. Paper and Forests. Pulp and Paper, xix, 58 (Jan. 20, 1921). Twelve years ago the United States forests furnished all the raw materials for the United States paper industry; while now a full third of the paper or papermaking materials used in the United States comes from Canada. Most of the mills are in the coniferous forest belts of New York, New England, and the Great Lakes where, at the present rate of cutting, the pulpwood cannot last more than 15 to 18 years. By means of a proper forestry policy, the New England, Middle Atlantic, and Lake States could supply the paper mills several times over with pulpwood if they were kept at work growing it.—A. P.-C.

C-0. Fire Prevention in Pulpwood by Means of Artifical Fog. F. J. HOXIE, Boston, **Paper,** xxvii, 15, 13-9 (Dec. 15, 1920); **Pulp and Paper,** xix, 5-7 (Jan. 6, 1921), 37-9 (Jan. 13, 1921). A large log pile fire presents an exceptionally difficult problem in fire protection and engineering, in that many times as much quick-burning fuel is present in a concentrated mass as is found in any form of building in which fires are commonly fought. The absence of walls and the exposed position and height of the log pile cause ideal draught conditions, so that the rate of combustion is ultimately limited by the velocity at which air for combustion can be carried away. If a fair sized pile should become ignited, there is practically no chance of mastering the fire after the first 10 to 15 minutes; and in such a case the best that can be hoped is to prevent it from spreading to other piles. The rate of combustion in fires of this nature is generally in the neighborhood of 25,000 to 30,000 per minute, liberating enough heat to evaporate about 25,000 to 30,000 gallons of water a minute. The wood may be protected in two ways: by making several separate piles, so that if one of them should become ignited the others may be protected; and by keeping the surface of the wood continually moist so as to prevent it from becoming ignited. The former method is more costly but may be employed when the quantity of wood handled is not too large. It is especially worth considering for the manufacture of chemical pulp from dry wood. In the case of very large piles the second method seems to be more promising. The method consists in spraying the pile with sufficient water to maintain the air in the immediate neighborhood of the pile saturated and the wood in the pile continuously wet. It has been calculated that about 60 gallons per minute ought to be enough, even in August weather, for a 10,000-cord pile. A permanent system which suggests itself as highly practicable where fixed conveyers are in use, is to attach half-inch pipe to steel cables from the conveyor to the ground at a sufficient height above the pile to prevent damage from the falling logs, the pipes being spaced about 20 ft. apart along the conveyor with heads about 30 ft. apart along the cables, these heads discharging half-a-gallon a minute each. Experiments are now under way at six large paper mills at least on the use of spray nozzles the object being to determine the most effective spacing arrangements of piping and capacity of heads. Results thus far indicate that 2 qt. heads as manufactured by the Spray Engineering Company, spaced 30 feet each and elevated 5 feet above the surface of the pile, will give satisfactory service with a pressure of 50 to 70 lbs. at the head. Half-inch branch pipes feeding 5 to 8 heads appears to be large enough. The main feed pipe should be large to supply monitor nozzles and to keep down the water velocity to prevent keeping sediment in suspension, which would clog the nozzles. Both methods of protection against fire have the further advantage of protecting the wood against decay also. The decay of wood is due to bacterial action, and the organisms require a certain amount of moisture to develop. If there is either insufficiency or excess of moisture they cannot develop, so that the protection of the pile against decay is obtained by keeping the pile either too wet or too dry for the organisms to develop properly. —A.P.-C.

D-5. Process for Making Bright White Groundwood Pulp. Papier Markt (Dec. 1920) ; **Pulp and Paper**, xix, 12-3 (Jan. 6, 1921). The wood is subjected simultaneously to the action of a temperature of 100° Cent. and to a hydraulic pressure which may be as high as 10 to 13 atmospheres. When the pressure is lower, the time of the treatment must be lengthened. According to German patent 280,717, the wood is treated for several hours with hot water under pressure at a temperature of 100° Cent. or less; and according to German patent No. 315,679, it is treated with water at 80° cent. under a slight vacuum so that the water is continually boiling. The wood treated by any of the above methods, it is claimed, is much whiter and easier to grind.—A. P.-C.

G-8; K-12. Pulp Vat. Can. patent No. 207-485, AKTIEBOLAGET KARLSTADS MEKANISKA VERKSTADS, assignee of RUDOLF ERNST WAGNER, both of Karlstads, Sweden, Jan. 11, 1921. In a pulp vat and the like, the combination of a rotary strainer cylinder for gathering the pulp, and a press roller pressing against said cylinder and provided with peripheral grooves, notches, deep slots, or the like, for the purpose of rendering possible an increased pressing out of the the pulp sheet gathered on the strainer cylinder.—A.P.-C.

G-6; K-11. Cylinder Strainer for Woodpulp. Can. patent No. 207,484, AKTIEBOLAGET KARLSTADS MEKANISKA VERKSTAD, assignee of RUDOLF ERNST WAGNER, both of Karlstads, Sweden, Jan. 11, 1921. In a strainer cylinder for woodpulp and cellulose, the combination of a pulp container, a rotary cylinder divided into cells, a strainer cloth surrounding said cells and forming the outer surface of said cylinder, and upwards rotating portion of said strainer cloth above the horizontal plane through the axis of the cylinder forming one wall of said pulp container, a stationary suction box located in the interior of said cylinder within said cells and having a suction opening opposite the upper part of said portion of the strainer cloth forming a wall of said container, and a wall opposite the lower part of said portion of the strainer cloth, said wall forming a stationary bottom for the cells covered by said part, for the purpose that during the rotation of the cylinder the cells moving into the pulp container shall at first be closed and shut off from the suction box and afterwards placed into communication with said suction box when a filter layer has been formed on the strainer cloth over said cells by natural straining.—A.P.-C.

K-2. Recovery of Waste Heat. Can. patent No. 207,-486, AKTIEBOLAGET KARLSTADS MEKANISKA VERKSTAD, assignee of RUDOLF ERNST WAGNER, both of Karlstads, Sweden, Jan. 11, 1921. A means for recovering heat leaving paper machines and the like, comprising in combination a collecting vessel for steam, air and water, rotary surfaces in said vessel partly submerged in the water in the same, means for collecting and conducting the waste steam and hot air from the machine into said vessel, means for removing cooled air from said vessel.—A.P.-C.

K-6. Preparation of Paper Pulp from Sugar Beets. Bull. Synd. Fab. Papier et Carton, xxii, 349-50 (Dec. 1, 1920). The pulp remaining after the extraction of the sugar is treated with lime water or other alkaline liquor, heated for half-an-hour to 80 to 100° Cent., and drained. If the pulp still has an acid reaction, it is subjected to a second alkaline treatment. The pulp is washed thoroughly, subjected to the usual mechanical treatment, and bleached. With 1 to 2 percent of available chlorine a cellulose is obtained which is suitable for the preparation of nitrocellulose. For the manufacture of cardboard, it is sufficient to bleach the pulp with SO_2. The raw material should be treated as soon as possible after it comes from the diffusers.—A.P.-C.

K-7. Beating — Today and Tomorrow. W. B. CAMPBELL, **Pulp and Paper, xix, 65-7** (Jan. 20, 1921). Brief historical sketch of the hollander. Numerous attempts have been made to improve beaters, but with the exception of the jordan, they have all gone to the scrap heap. The outstanding feature of the ordinary beater which has kept it in use so long is the facility with which it can be used to secure any desired result. The better known improvements to the hollander are the Rabus, Marx, and Niagara beaters, lava rolls and the jordan refiner. The latter is taking the place of the beater to an ever increasing extent; but it is unlikely that it will ever replace it entirely. Further improvements will likely be in the direction of increasing the speed of circulation of the stock and the rubbing surface by means of which hydration of the stock is obtained. By the use of a lava stone lining for the hood, and by bringing down the hood in front of the roll so as to return the stock immediately to the working space between the roll and the bedplate, the work of the beater might be done so quickly that the beater could be made continuous, the control being effected by adjusting the flow of stock to and from the beater. The recent researches of Miss Minor on the mechanism of beating are briefly summarized (see **Pulp and Paper**, xviii, 300, A-15, March 18, 1920, A-15, 497, L-5, May 6, 1920). Results of Kress and MacNaughton at the Forest Products Laboratory, Madison, Wis., and unfinished experiments being carried out at the Forest Products Laboratories, Montreal, Canada, tend to show that the production of a beater, other things being equal, is in proportion to the weight of fiber which passes under the roll per min., and that in any one beater the production per h.p. is constant over a considerable range of consistencies.—A. P.-C.

K-10. Rosin-wax Sizing Process. Can. patent No. 207,336, JUDSON A. DECEW, Montreal, Que., Canada, Jan. 11, 1921. A process which comprises incorporating with fluent paper stock, a sizing composition containing rosin size and wax, and an aluminium compound capable of precipitating the same, making the material into paper, drying the paper, and heating the same to a degree sufficient to melt the rosin oil alumina compound by passing the same between heated pressure rolls maintained at a temperature above 100° Cent., whereby the same molten material spreads itself, in fluid condition, throughout the body of the paper.—A.P.-C.

K-10. Aluminium Rosinate Sizing Process. Can. patent No. 207,337, JUDSON A. DECEW, Montreal, Que., Canada, Jan. 11, 1921. A process of sizing paper stock, which comprises treating the same in a fluent

(Continued on page 674.)

PULP AND PAPER NEWS

The fat is now fairly in the fire, so far as the printing strike in Toronto is concerned. Last Friday, the employing printers, at a meeting held in the Methodist Book Room, Toronto, unanimously reaffirmed their opposition not only to wage increases, but also to the forty-four hour working week and to the open shop. They, further, announced their intention of having no individual dealings with the unions. The negotiating committee, which, had been appointed, reported to the meeting in question that it had done all it could to reach a settlement of the question involved, but without avail, and it accordingly resigned as there seemed no further object to be gained in longer keeping it in being. Thus the issues are definitely joined. The breach between the employing printers and the strikers seems to have widened since the commencement of the strike. It now appears likely that the dispute will be a protracted one. Both parties evince a determination not to give way. One curious by-product (so to speak) of the strike should be noted, as it is unquestionably having the effect of hardening the employers' attitude of opposition to the strikers' demands: The employers claim that the contention that operation under strict trade union regulations restricts production is now receiving practical demonstration. One firm reports that, though operating on a reduced staff, by reason of the strike, its production is at normal. This claim is attracting a good deal of attention among employers in Toronto outside the ranks of the employing printers. The matter is one as to which we shall hear a good deal in the future.

Considerable interest, not unmingled with anxiety, is being evinced in pulp and paper circles—and, indeed, in commercial circles generally—in Toronto and district, as to whether the millions urgently needed to prevent liquidation on the part of the Riordon Company will be forthcoming. One big financial man, with an unsurpassed knowledge of Canadian commercial and industrial conditions expressed himself, this week, to the writer as being extremely apprehensive of what the sequel might be if liquidation should ensue in the case of this Company. "I am not speaking unadvisedly," he remarked with emphasis, "when I say that it is quite on the cards that liquidation in this case might be but the precurson of a number of business failures. For it is a salient and significant factor of the situation that more than $3,000,000 worth of unsecured debts are included in the Company's liabilities. Not all of the unsecured creditors may be strong enough in the financial vertebrae to be able to bear the heavy losses which would probably result from liquidation. Especially is this the case just now when many businesses are finding it all they can do to carry on at all in the face of such widespread business depression." That is one aspect of the matter. But, beyond that, it is felt by those whose finger is on the pulse of commercial conditions that the failure of a pulp concern of the dimensions of the Riordon undertaking would react most detrimentally on the pulp and paper industry, as a whole, inasmuch as it would tend seriously to impair public confidence in that industry's strength and stability. Not only so, but since the pulp and paper industry has now achieved so leading a position among the basic industries of this country, the failure of this concern would deal a blow to Canadian industry generally.

Last week, a block of Riordon timber limits, eighty square miles in extent, north of the Ottawa river to the west of Ottawa, was sold to Ottawa interests at $3,000 per square mile, making a total of $240,000. It is understood that one or two other small areas of the Riordon timber limits are under option to lumber interests, but sales have not at the moment of writing been made.

Representatives of the Spruce Falls Pulp and Paper Company, headed by the Hon. W. D. McPherson, waited on the Hon. E. C. Drury, Premier of Ontario, last Thursday. This Company had entered into agreement with the Ontario government with respect to paper mill and other construction on the townsite of Kapuskasing, in Northern Ontario. It is reported that, among other representations made to the Ontario Premier by the Company's spokesmen, it was alleged that the expenditures necessary to plant establishment had actually been four times the amount originally contemplated; and the Company asked for concessions with respect to time limits for manufacturing, should it find it impossible to comply with the time limit which ends on the 1st January. The Company was promised every consideration. It is said that work on the plant has been slowed up now for some time, and that active operations are being carried on only on the sulphite mill.

One cannot fail to be impressed with the very general sense among manufacturers in the Toronto district—and not least among those engaged in any branch of the pulp and paper industry—of the imperative need of industrial research in this country, and with their keen disappointment at the Senate's action in killing the bill for the Industrial Research Institute, last session. The general opinion among manufacturers undoubtedly is that, while manufacturers can fairly be expected to do some of the necessary research work themselves, yet the inspirational, as well as practical, results which would accrue from the activities of a central Research Institute, working along scientific and co-ordinated lines, would be an inestimable benefit to the industrial life of the country—especially at this stage of its partially arrested development.

UNDERWOOD RESOLUTION UP AGAIN.

A resolution by Senator Underwood, Democratic Leader in the Senate, creating a Federal Commission to confer with the Canadian Government on revocation of orders restricting wood pulp exports to the United States, has been favorably reported by the Senate Rules Committee. Five commissioners would meet representatives of the Dominion Government and the Provincial Governments of Ontario, Quebec and New Brunswick. If an agreement could not be reached, the commission would recommend action by Congress.

UNITED STATES NOTES

Labor troubles in and about Green Bay, Wis., are practically at an end. With the single exception of the Green Bay Paper and Fibre Company, whose mill is still tied up by a strike, difficulties that have interfered for weeks with operations in some of the larger mills, have been settled. The latest settlement reported from Green Bay is one affecting the plant of the John Hoberg Company. Operations were resumed in this company's mill a week ago when the striking employees returned to work under an agreement whereby they accepted a wage reduction of 16 2-3 per cent. It was said that the agreement was very similar to that accepted by striking employees of the Northern Paper Mills, which resumed operations a week before, after being hampered by a strike for more than twelve weeks. An early settlement of the Green Bay Paper and Fibre Company employees' strike is expected.

Officials of leading Maine pulp and paper establishments and a number of prominent foresters of the State have organized a forestry club, to be known as the Penobscot Forestry Club. The organization was effected at a meeting held recently at the Chamber of Commerce, Bangor, Maine. D. A. Crocker of the Eastern Manufacturing Company, was elected president, R. E. Pineo of Milo, timberland dealer, was elected first vice-president, H. B. Morse of the Orono Pulp and Paper Company, second vice-president, Shirley Rogers of the Northern Paper Company, third vice-president, and P. T. Coolidge of Bangor, Me., forestry engineer, secretary and treasurer.

Two bills are before the present session of Congress aiming at forest protection, but neither one is likely to pass without a sharp fight. One measure leaves protection to the States and one puts it on the national Government. In reality, both groups of conversationists believe sound policy would favor government control, but one of them accepts state control in order to overcome the opposition of the three great lumber producing States of Washington, Oregon and California.

The Forest Service of the United States Department of Agriculture gave a very succinct summary of the forestry situation in the United States in a statement it sent out broadcast in connection with the recent country-wide observance of Forest-Protection Week. "Three fifths of the original timber supply in the United States is gone," read the Forest Service statement. "There is now consumed annually more than 51 billion board feet of material of saw timber size, and nearly 5 billion feet is destroyed by fire, insects and other agencies. Our depleted forests are growing less than one-quarter of this total amount. Not only are the remaining virgin forests being cut heavily, but we are using up the second growth and small material on which depends our future supply. In all, the requirements of our population are close to 300 board feet per capita. The answer to the forestry problem is not to use less wood, but to grow more—to put our idle acres to work producing trees. The crux of the problem lies in preventing forest fires."

A. B. Borregaard, of Chistiana and Sarpsburg, Norway, one of the leading Scandinavian pulp manufacturers, is establishing an agency in New York City. Anthon Olafson, a director in the concern and also President of the Poland Paper Company, will be the executive head in the new branch office. The Borregaard Company has pulp mills in Norway, Sweden, Austria and England. Its reputation in the United States has been established through the extensive sale of its products on this side of the Atlantic for more than a score of years. Mr. Clarence P. Robinson has left a place in the chemical and pulp departments of Daniel M. Hicks, Inc., to take the position of manager of the sales department in the new agency. The opening of offices in New York marks the carrying out of Mr. Borregaard's idea that to do so would afford the means for dealing direct, giving the mills the lowest possible price consistent with the quality of the products; and at the same time, giving an opportunity for more intelligent co-operation.

Donald D. Conn, who is in Washington on behalf of the Northwestern Lumber Retailers and Manufacturers, has compiled data to show that the imposition of a tariff on lumber, pulp and pulpwood will prove detrimental to the trade interest of the United States. "The growth of Canada has been great and our exports to Canada have grown from $47,735,679 in 1873 to $801,100,700 in 1920," Mr. Conn states. "In 1919 the United States shipped to Canada 81.5 per cent. of the foreign purchases in that country. The large exports of United States products to Canada covered practically every branch of industrial endeavor in the United States. To cut off the exportation of lumber from Canada to the United States, which the proposed 25 per cent. ad valorem tariff on dressed lumber would do, would only serve to make it impossible for Canada to exchange commodities for commodities, and as a result our trade with that country could not be maintained on a sound economic basis. Such items as lumber, pulp, pulpwood, etc., which the United States is in dire need of, while depleting our own natural resources, should not be restricted in their movement from Canada, first because of our own selfish motives to obtain these products which can go to equalize the United States proportion of imports that Canada purchases."

A lease, giving access to one of the finest pulpwood tracts in the Adirondack region to the Hinckley Fibre Company, was signed last week by the Adirondack League Club and representatives of the paper company. A total of nearly $500,000 is understood to be involved in the deal which covers the lease of rights to cut valuable pulpwoods for a period of twelve years. The deal has been under consideration for over a year. The Hinckley Fibre Company will be assured a steady supply of pulp during the period over which the contract extends. Its supply of this necessity had become almost exhausted. The company is controlled by H. L. Paddock, and interests identified with the Oswego Falls Pulp and Paper Company of Fulton, N. Y. The latter concern will also be supplied from the Adirondack tract. The Adirondack Club will still occupy the tract, and it has been stipulated in the agreement that the cutting shall be done in conjunction with proper reforestation measures so that the scenic beauty of the section will in no way be impaired.

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condition separately with a solution containing a soluble aluminate and with a dilute solution of rozin size containing free rosin acid, the solutions being diluted to such an extent that the free alkali in the aluminate solution will not saponify the free rosin acid in the soap solution. See also Fr. patent No. 499,415, May 12, 1919. **Pulp & Paper**, xviii, 756, July 15, 1920.—A.P.-C.

K-12. Paper Web Carrier from Driers to Calenders. Can. patent No. 206,167, CHARLES E. POPE, Springfield, Mass., U.S.A., Jan. 4, 1921. The combination with the drying rollers and calendering rollers of a paper machine, and a scraper cooperating with the last of the drying rollers, of brackets attached to the machine forms and guide plates supported by said brackets arranged to form a guiding passage between said rollers, having an inlet opposite the scraper, and an outlet at the bite of the calendering rollers, and terminating remotely from the last drying roller to provide an open-ended unobstructed vertical space there-between, means for delivering currents of air at said scrapers for blowing a lead strip of the paper web across said space into and along said guiding passage and means for delivering other currents of air into said guiding passage above the aforesaid air currents, said air-currents being directed in the direction of movement of said strip and supporting the strip as it is moved along.—A.P.-C.

K-12. History and Future Development of Paper Machine. STUART D. LANSING. **Pulp and Paper**, xix, 109-11 (Jan. 27, 1921; **Paper**, xxvii, 23 (Feb. 9, 1921). Brief history of the evolution of the paper machine, and especially of the progress accomplished during the last thirty years or so. L. prophesies that paper will be made at 1,500 to 2,000 ft. per min. within a relatively short time, and that width and speed can be combined in one machine.—A. P.-C.

K-12. Grooved Press Rolls. Can. patent No. 207,483, AKTIEBOLAGET KARLSTADS MEKANISKA VERKSTAD, assignee of RUDOLF ERNST WAGNER, both of Karlstad, Sweden, Jan. 11, 1921. A roll comprising a roll body, and a roll jacket around said body provided with generally longitudinal grooves in its inner surface, and with circumferential slots in its outer surface, said grooves and said slots having such depths as to reach one another.—A.P.-C.

K-12. Cylinder Mould for Paper Machine. Can. patent No. 207,057, REGINALD RICHARDSON and JAMES L. KEY, co-inventors, both of Overton, England, Jan. 4, 1921. In a cylinder mould for paper-making machines, the combination shaft, a plurality of longitudinally arranged bars mounted for radial movement on the frames, a mould cover supported on said bars, and a ratchet wheel supported on one of said frames concentric with said mould cover adapted to engage said bars, said ratchet wheel being rotatably adjustable to actuate the bars.—A. P.-C.

K-12. The Hardy Stock Regulator. Pulp and Paper, xix, 147 (Feb. 3, 1921). Description of the Hardy regulator and of its method of operation.—A. P.-C.

K-12. Speed Interlock as Applied to the Paper Machine. F. G. WARBURTON. **Pulp and Paper**, xix, 59-64 (Jan. 20, 1921); **Paper**, xxvii, 22 (Feb. 2, 1921). An analysis of belt and rope drives on paper machines, showing their defects and the advantages of the electric drive, provided the relative speeds of the motors driving the different sections of the paper machine can be satisfactorily regulated. The interlock of speed control (particularly as installed in connection with the new Laurentide machines) is described in detail and its method of operation is fully explained. The efficiency of the speed regulation by this system was proved on Laurentide's No. 8 machine, when the speed was rapidly raised from 600 to 950 ft. a min. without breaking the sheet.—A. P.-C.

K-18. Fibers for Making Rough Pasteboard. Can. patent No. 207,131, RUDOLPH KRON, Gerseau, Switzerland, Jan. 4, 1921. A process for making cheap fibers which felt together not too densely, producing an absorbent spongy sheet sufficiently durable for application to the manufacture of rough pasteboard to be saturated with tar or bitumen for roofings, linings, or the like, which process consists in converting logs or other relatively large pieces of wood or ligneous or strongly siliceous plants into fibers without the use of alkalis or acids, by boiling with water or by steaming and subsequently rolling out, crushing, and grinding so as to obtain the natural cellulose fibers without deterioration and not weakened by chemical agents.—A.P.-C. (Same as Fr. patent No. 493,387. See **Pulp and Paper Mag.**, xviii, 58, Jan. 15, 1920).

K-18. Fiber-faced Concrete Wall. Can. patent No. 207,274, BROR GUSTAV DAHLBERG, assignee of HERBERT A. SULLWOLD, both of St. Paul, Minn., U.S.A., Jan. 4, 1921. The process of making a wall or roof of concrete which will be dripless on its surface which consists in providing a suitable form, placing the fibrous material known as "insulite" on the interior of said form, applying said concrete in a fluid condition directly to said insulite to form a bond therewith, and after said concrete has set removing said form, substantially as described.—A.P.-C.

L-6. Pulp Moulding Apparatus. Can. patent No. 207,534. The Keyes Fiber Company, Waterville, assignee of BERT R. WILLIAMSON, Fairfield, both in Maine, U.S.A., Jan. 11, 1921.—A.P.-C.

M.-O. Safety Valve for Pressure Cookers. Can. patent No. 207,103, WALTON C. FERRIS, Lincoln, Nebraska, U.S.A., Jan. 4, 1921. A safety valve for steam cookers comprising a bowl-shaped body having a valve-seat passage adapted to communicate with the cooker chamber and an external spiral thread, a cap fitted on the bowl and having a pin connection for engaging the spiral thread in the bowl, the said cap having a valve stem guide, a valve mounted in said guide and adapted to close the said valve seat passage, and a spring device connecting the valve with the cap whose tension is increased or diminished as the cap is screwed off or on the bowl-shaped body, the said body having provisions for the escape of steam, when the valve seat is open.—A. P.-C.

P-0. Tanks and Pipe Lines as Causes of Accidents. HOMER A. HOFFMAN. **Chem. Met. Eng.**, xxiii, 1023-5 (November 24, 1920). A study of the hazards involved in the use of storage tanks and pipe line distributing systems in chemical plants; together with a description of safe methods for the construction, cleaning and repairing of underground and overhead tanks and pipe lines.—A.P.-C.

R-12. Facts about Present Costs of Manufacturing Newsprint. Pulp and Paper, xix, 9-10 (Jan. 6, 1921). A review of the principal factors which affect the price of newsprint paper, including pulpwood, labor, transportation, mill supplies, losses and risks, showing that the economic readjustment which has been manifested in other industries is not yet evident in newsprint manufacture.—A.P.-C.

British Trade News

(From our London Correspondent.)

London, June 5, 1921.—The Anti-Dumping Bill, in which the British Paper makers want inclusion to save them from the debased exchange existing in Finland and Germany, was before the House of Commons during the past week. Several amendments were submitted and, notwithstanding opposition the Bill received a good Government majority. It is explained that a referee will be appointed who may decide the articles to come within the meaning of the Bill.

New Sunday Paper.

It is good to hear of new projects in these days of dullness and depression. The "Sunday Illustrated" is the title of a new paper which is to appear early next month. I am told that big plans are on foot for the venture and no expense is being spared. No doubt some of the newsprint sellers will benefit by the large circulation that is expected.

Thos. Owen & Co., Ltd.

The report of Messrs. Thos. Owen & Co., Ltd., Ely Paper Works, Cardiff, the big newsprint producers, states that the profit for the past year, after making due provision for taxation and reserves (and carrying £10,000 to the pensions fund) amounts to £25,113. After adding thereto the sum of £26,743 brought forward from last year there remained a balance of profit amounting to £51,856. From this interim dividends for the half year of 7½ p.c. free of tax on the ordinary shares and at the rate of 6 p.c. per annum on the preference shares have been paid, absorbing £17,250 and leaving £34,606 now available. The directors recommend that this be appropriated by the payment of a dividend of 5 p.c. free of tax on the ordinary shares, which will absorb £7,500 and a dividend for the half year at the rate of 6 p.c. per annum upon the preference shares, which will take £6,000. This will leave £21,106 to be carried forward.

The Miners' Strike.

There are no signs of the miners' strike coming to an end. Indeed the industrial situation is very grave just at the moment and the coal miners have been joined by half a million textile workers who object to their wages being cut down as the cost of living declines. There is also a feeling of unrest in the engineering trades. Many of the mills are now without coal and the work is suspended. So far no one seems to be able to patch up the difference between the coal miners and the mine owners. Between them they have dislocated all the trade of the country and nearly £40,000,000 has been spent on unemployment by those in authority. The whole atmosphere at present is unwholesome and the industries as well as the trade of the country are receiving a rude shock.

Newsprint Prices Down.

Producers of newsprint in the United Kingdom have decided to meet foreign competition by reducing their price. Quotations are now down to 5½ cents a lb. This means a serious loss as the paper is produced on pulp purchased at last year's rulings, and paper mill owners have no chance of recouping themselves in the face of foreign imports selling at less than the British cost of production.

Official View on Present Situation.

In the House of Commons Admiral Adair asked the President of the Board of Trade whether it is the case that the paper trade of the United Kingdom is seriously affected owing to the high prices of raw materials, chemicals and coal, and to the state of the exchange; whether the greater part of the paper mills are either shut or working very short time consequent on foreign competition, and, if so, will he consider including paper in the Safe Guarding of Industries Bill with a view to checking, at any rate, imports of paper from Foreign countries and so enable the British mills to continue in operation?

Sir P. Lloyd Greame, replying said a large number of paper mills are at present either entirely shut down or working short time, owing to the high cost of raw materials, the increasing supplies of paper imported from abroad and the decline in the demand. Insofar as foreign competition is from countries with depreciated currencies it is not intended to exclude from the provisions of financial resolution No. 2 relating to the safeguarding of industries any industries other than food industries.

Canadian Coal in England.

During the past week 5,600 tons of Canadian coal reached Hull. It will be used for industrial purposes. Further cargoes are on the water. This will give an indication of the state of affairs at present existing in the United Kingdom.

Lord Byng for Canada.

Canadians will be pleased to hear that Lord Byng has been selected as Governor-General of Canada in room of the Duke of Devonshire. General Byng commanded the "Byng Boys"—known as the Canadian Corps. During my service in France and Belgium, under General Byng, I met many Canadians who will be interested in the new appointment—and I am sure will give their old leader a Canadian reception.

SMOKE FROM THE PAPER STOCK FIRES.

There was strong suggestion, in evidence heard by the Fire Commission yesterday, as to the destruction of the premises of the Canada Paper Board Co., corner of William and Seigneurs streets, on June 4th, that the fire was caused, accidently or otherwise, by intruders getting into the place through the windows.

In fact, Mr. Robertson said that they had found it necessary to board up all the windows, and that the boards had been torn off by intruders on several occasions, his attention having been called to a repetition of this occurrence on the very day of the fire.

Mr. Robertson estimated the damage at $10,000 on the stock, covered by insurance, and $76,000 on the building, on which there was insurance of $45,000.

Found no Cause for Kander Fire.

No cause was ascertained for the fire which entailed a $10,000 loss in the premises of the Kander Paper Stock Co., 332 William street, at 12.08 a.m., June 7th.

The firemen stated that the second and third stories of the building were a mass of flames when they arrived on the scene and that it was impossible to decide where it had originated, although they inclined to the opinion that it was on the second floor.

Mr. Kander said they had $10,000 insurance on the stock. He mentioned that their present watchman, who had come well recommended, had succeeded one who was dismissed for sleeping at his post, about eight days ago.

Thumbed over by greasy, dirty hands, continually spattered by flying oil or water from the cutting tool, Production Tickets must be printed on strong, tough paper to withstand the wear. Writing Manilla fills the bill admirably.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, 18th June.—Resumption of work at capacity at the plants of Price Brothers and Company and the Abitibi Power and Paper Company's plants is regarded as an encouraging development in the newsprint situation. For stocks had been running remarkably low by reason of strikes. At the end of last month, stocks were moving pretty freely out of the jobbers' hands, and this gave a considerably better tone to the market than had prevailed for some months previously. But this freer movement of jobbers' stocks seems to have been largely due to anxiety to get the printing jobs out before the strike, which is now on in Toronto and other places, became an accomplished fact. Thence, the better tone, which was observable at the end of last month, was of a spasmodic, and almost spurious, kind. And now that there is every indication here that the printers' strike, which it was at first anticipated would be settled in comparatively short order, may turn out to be a protracted affair, there is little present optimism in evidence among the trade as a whole. The resumption of work at the newsprint mills mentioned above should operate in the direction of obviating a rise in prices which would probably have come about had the complete shut-down continued for long. No further reductions are anticipated at present in the prices of book paper, bonds, ledgers and other standard lines. But the general condition of the market is dull and depressed.

PULP.—Some slight improvement in the demand for pulp has been evidenced just lately, but, on the whole, the demand continues to be of the "hand-to-mouth" description on which comment was made last week. The prevailing depression, alike in internal and in external markets, which characterizes nearly all businesses just now, is having its effect on certain grades of pulp and paper. Particularly is this the case with those which depend on publishing and advertising. The printers' strike is detrimentally affecting such lines, and, in addition, there is a tremendous falling off in the volume of general advertising owing to depressed business conditions. Some improvement, however, is to be noted in the kraft pulp situation.

TOILETS AND TISSUES.—In a talk this week with one of the principal manufacturers of toilets and tissues, the writer was informed that business in these lines can now be described as very good. Prices in these lines are today nearer to pre-war prices than in any other lines of paper. For example, the present price of 4 oz. toilet roll is $3.38 per case, delivered to delivery points, whereas the pre-war price of this line can be considered as having been about $2.80. The present tissue prices are as follows: No. 2 Manila tissue, 24 by 36, $1.30 per ream; Natural white, 24x36, $1.50 per ream; No. bleached white, 24x36, $1.95 per ream.

BOX BOARD.—There is absolutely no change in the box board situation, as reported last week. Prices continue the same. Things are moving slowly, and there is nothing much in the way of improvement in sight.

COATED PAPER.—On the whole, slackness continues to characterize the trade in coated paper. Some of the mills are reported to be doing a fair amount of business, though this is not the rule, and, even with these fortunate ones, the business done is too much on the light side. No substantial improvement in conditions seems to be expected in the near future.

WRAPPING PAPERS.—The tone of the wrapping paper trade continues much the same as reported last week. Prices remain unaltered and there is just sufficient business coming along to keep things moving slowly. Jobbers report some improvement in the demand in the rural parts.

MANUFACTURED STATIONERY.— The general tone of the business in manufactured stationery varies from the rather dull to the fairly satisfactory. Jobbers are, for the most part, buying only for immediate requirements, but many manufacturers are doing a fair amount of business, and there is a general anticipation that this will be considerably improved in three months or so.

RAGS.—The demand for roofing rags is the only substantial kind of demand in the paper-making rag market. The movement of this class of stock to the mills will probably be accelerated shortly, and, if so, there is likely to be a considerable rise in prices, as the stock of mixed rags is remarkably low.

NEW YORK MARKETS.

New York, June 18—(Special Correspondence)—The paper market has been essentially unchanged this week insofar as regards any important development or fluctuations in prices. That improvement is gradually taking place is evident on all sides, yet it must be said that buyers continue to proceed cautiously and that the pick up in trade activity is slow. Demand for certain kinds of paper is comparatively good; in fact, far better than it was not so long ago, but the aggregate movement of supplies into consuming channels is still considerably below normal and seems likely to remain so until next fall. Consumers in the United States of all descriptions of goods, whether it be paper or various other manufactured commodities, are not yet disposed to anticipate their wants, and are sticking to their policy of buying only as the need arises. As one of the leading bankers of the country stated several days ago, the business situation no longer hinges on the matter of prices—prices in most instances are today relatively below pre-war levels and in numerous cases under the cost of production,—but more on the need of a buying movement; of the regaining of confidence by the general public and a resultant willingness to look ahead and buy accordingly. That this condition will develop in due time is a consensus of opinion among business men, but it does not prevail as yet, and present indications are that it will take several months longer for the feeling of skepticism to be dissipated and the buying power be again instilled in the consuming public.

Further conferences have been held in New York this week between officials of the International Paper Company and representatives of the operativs in the mills of that company with a view of reaching a settlement

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in the strike situation which is holding the I.P. plants at a standstill. According to an announcement made last night, no decision has yet been reached, though it can be stated that matters look favorable for an early solution of the labor difficulty and a resumption of operations at the newsprint mills. There is little question that if the International comes to an agreement with the strikers that other newsprint manufacturers will fall in line and adopt similar measures toward ending the strike in their plants, so that the entire industry is intently watching the outcome of the conferences in this city. (Later: No agreement was reached.)

A fairly steady tone prevades the newsprint market. Consumption is declining somewhat, which is usually the case at this time of the year, but there is moderate activity in the open market while shipments on contract are moving forward regularly. Spot prices are holding at around 5 cents per pound on newsprint in standard rolls for prompt delivery, and although occasionally sales are reported at less than this figures, there is not much supply to be had at the cheaper prices. Sheet news is in rather slack demand and is quoted at about 5.50 cents on contract and at around 5.75 cents in the open market.

Fine papers are gradually showing more life but current buying is confined almost exclusively to immediate requirements, and writing paper mills are far from busily engaged. It is difficult to name prices on fine papers as quotations are so irregular and on such a broad range. A fairly good grade of sulphite bond can be purchased today at 12 to 15 cents per pound, while ledger papers are available at from 13 cents upward, with between 18 and 20 cents an average of quotations.

There is nothing of note new in the book paper trade. Mills are running chiefly on contract commitments and are quoting approximately the identical prices previously reported. Wrappings are in moderate demand and No. 1 domestic kraft wrapping is quoted at 6.50 to 7 cents per pound at the mill. Tissues are favored with considerable demand, especially coarse grades, and quotations rule steady.

Boards are firming and are moving in larger quantity almost every day. Prices on box boards evidently are at rock bottom and this apparently is attracting buyers, who are laying in supplies not only for immediate wants but also to cover forward needs. Plain chip board is quoted at $35 a ton at mills by a majority of producers, with transactions reported ranging down to $30, while filled news board is bringing from $32.50 up to $37.50 a ton f.o.b. mills.

GROUND WOOD. Open markets trading in ground wood is of rather limited dimensions. Buyers are coming into view off and on and are absorbing fair-sized amounts of pulp, but in the aggregate business involves a comparatively light tonnage of ground wood. One reason for this apparently is that consumers look for the strike of newsprint and pulp mill workers to be settled soon, thus leading to a larger available supply of mechanical pulp, which prompts them to hold aloof in covering other than direct requirements. Board mills are among the leading buyers at present in the spot market. Prime spruce ground wood is fetching around $30 a ton f.o.b. grinding plants, with occasional sales reported at a few dollars under this basis. It is stated that Swedish manufacturers are offering ground wood at prices comparing very favorably with domestic quotations, and that some orders are being placed on the other side for pulp for shipment to this market.

CHEMICAL PULP.—Prices on chemical wood pulp are easy and, according to reliable information received in the trade, are sagging off to lower levels. Bleached sulphite of domestic origin, it is stated, is being offered in some quarters down to 5 cents per pound at pulp mills, while reports have been heard of sales of domestic easy bleaching sulphite at less than 4 cents, of news grade sulphite at 3.50 cents and of domestic kraft pulp at close to 3 cents a pound. Quotations on foreign pulps are proportionately down, bleached sulphite being offered at 5.50 cents and less, easy bleach at 4.50 cents and kraft at 3.50 cents ex the dock on this side. The downtrend in prices naturally is causing paper manufacturers to refrain from buying unless in pressing want of supplies. Now and then reports are obtained of orders being placed in Sweden or Norway, but little buying of consequence is being done by Americans in Scandinavia, while demand for domestic pulp is of rather narrow compass. There are many who believe that pulp prices are near the bottom, yet few consumers appear willing to back up this belief by placing orders for sizable tonnage.

RAGS.—The paper making rag market is far from active. In some respects, particularly as regards roofing stock, there is a fair volume of business current, but taken as a whole the market is devoid of notable activity. Quotations on roofing rags are firm and incline upward, with dealers asking 90 cents to $1 per hundred pounds on No. 1 packing and 75 to 80 cents on No. 2 packing, but other grades mostly tend lower and buyers have no great difficulty in getting supplies at recessions from the figures named by packers. New cuttings are especially weak, and offerings have been

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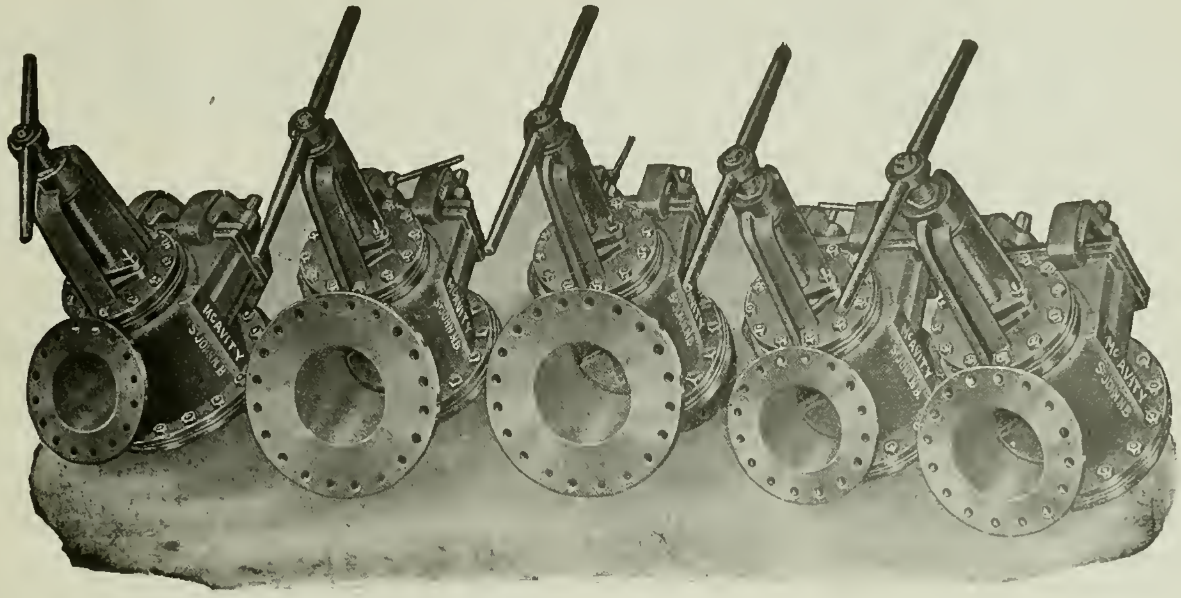

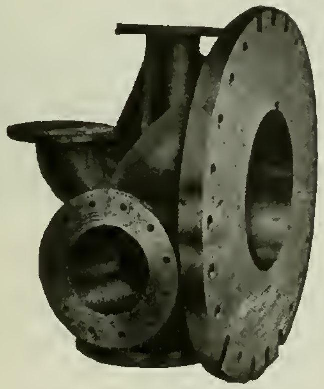

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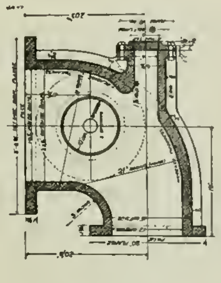

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reported at the following levels: No. 1 white shirt cuttings, 9 cents a pound; fancy shirt cuttings, 5.75 cents; blue overall cuttings, 6 cents; new light silesias, 5.75 cents; unbleached muslins, 8 cents, white lawns, 8 cents, and washables, 4.50 cents. Old No. 1 repacked whites are offered by dealers at 5.25 cents with few takers, while repacked thirds and blues are available to mills at 2 cents and less.

PAPER STOCK.—Old paper prices rule fairly steady and some grades which are in extra good demand and which are in apparently light supply are moving upward in value. No. 1 old kraft is a particularly strong item, and dealers assert they are refusing to accept mill orders at 2 cents a pound f.o.b. New York, asking 2.25 cents, while white news cuttings are held a around 1.75 cents at shipping points. Shavings are relatively firm in price at 2.25 to 2.50 cents on No. 1 soft white and around 3 cents on No. 1 hard white, while old flat magazines are quoted at a cent per pound. Mixed paper is bringing 30 cents a hundred at shipping points and is moving in slightly larger tonnage, whereas folded newspapers are scarcely wanted and are available at close to the same price named on mixed stock, offerings by dealers at 35 cents being quite numerous.

OLD ROPE AND BAGGING.—Paper mills have let up in their buying of old rope but dealers appear to have old commitments to cover and prices hold steady at an average of 4 cents per pound at shipping points for manila rope in No. 1 condition. There is no improvement in scrap bagging and prices are strictly nominal, with offers of No. 1 scrap freely made at a cent to a cent and a quarter per pound. Gunny also is dull and uncertain in value.

News From Our Advertisers

HAVE GREAT FAITH IN CANADA.

Something of the Plant and the Product being turned out by the Niagara Wire Weaving Company, Limited, at Niagara Falls, Ont.

The modern factory of the Niagara Wire Weaving Company, Limited, at Niagara Falls, Ontario, completed last year, is the result of a United Sttes' manufacturer believing in the future growth of Canada and wishing to serve the enormous Canadian trade they had built up during the past years, from a central plant right on the ground.

In 1919, Mr. Hamilton Lindsay, President of the Lindsay Wire Weaving Co., who is one of the most widely known and best informed men in this industry, organized the above company. He personally supervised the construction and equipping of the new plant, incorporating therein all the latest methods and machinery which were the results of years of experience and improvement in the Lindsay Wire Weaving plants.

The first unit was started in the fall of 1919 and completed in March, 1920. It is of full mill construction, 232 x 80 feet, two stories, with wings. In designing the building emphasis was placed on light conditions and the placing of the machinery in positions to produce best results.

In starting operations five looms were brought from the Lindsay Cleveland plant in sizes up to 240 inches. In the Canadian Company's own machine shop at the plant additional looms have been built continuously since that time, until to-day two-thirds of the unit is equipped, and the balance of the machinery is in process of construction and erection.

The Company were fortunate in being able to draw on the parent company for the experienced help and for the heads of its various departments. The manager, Mr. E. J. Buell, is a graduate of the Case School of Applied Science in Mechanical Engineering, and held a responsible position for some time in the Lindsay plant at Cleveland.

With the most modern machinery and experienced help the Company is turning out a high grade product in every respect. From the time the wire is received in the factory till it goes out in the finished product, every effort is made to retain the life in the wire and send out a product that will give large tonnage and long service to the user. Throughout the entire process the wire is subjected to rigid inspection. After it is completely woven and seamed, it is run through a special finishing process taking from three to four hours, so as to be sure that the wire runs true and to avoid any possibility of a defective wire leaving the factory. Extra large cores are used so the wire will lie as flat as possible when it is put on the machine in the mill. In packing especially heavy boxes are used to prevent springing, and the whole is encased in felt to protect the surface of the wire.

Plant of Niagara Wire Weaving Co.

The Company's product includes Fourdrinier Wires Cylinder and Washer Wires and Dandy Covers, as well as all grades of brass and phospher bronze wire cloth which is used in connection with the making of paper. The wires are made in any width up to 240 inches, which will accommodate any present or proposed paper machine in Canada. The Company also carry large stocks of cut cloth in meshes from 14 to 100, so as to be in a position to give immediate shipment to the Canadian paper mills.

The National Aniline & Chemical Co. has brought out a new dye called Niagara Blue R, which is suitable for coloring paper, chip board, etc.

Owing to increased activities and extension into a fully equipped engineering works manufacturing all classes of steel plate work and handling mechanical repairs of every description and also boiler repairs, the St. Lawrence Welding Company have in order to make their name more representative of the field they are covering, changed their name to St. Lawrence Welding & Engineering Works, Ltd. No change will take place in the personnel of the firm. A. M. Barry, Vice-President and General Manager, remains in active charge. The head office and works are located at 138-140 Inspector St., ontreal.

Pulp and Paper Magazine
OF CANADA

A Weekly Magazine Devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

VOL. XVIX. **GARDENVALE, P. Que., June 30th 1921.** **No. 26**

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J. NEWELL STEPHENSON, M.S., Editor.

The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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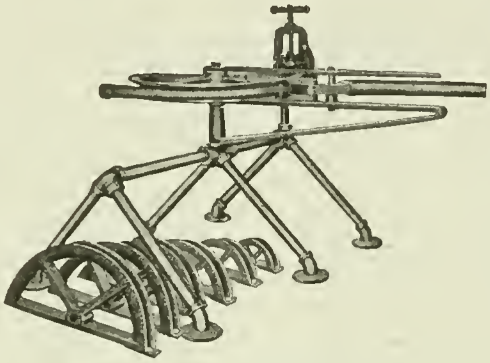

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EDITORIAL

TIME TO GET READY.

A year ago few people thought possible the rapid and general depression that has such an unfortunate effect on general business conditions in Canada and the United States. Even in Great Britain and Europe there were hopes that a recovery would progress in a satisfactory manner. The delay on the part of Germany to accept the inevitable results of her military failure and to begin payment of the indemnities fixed by the Allied Commission has seriously retarded the stabilization of European business and economic conditions. The out-cropping of old jealousies in Southeastern Europe, besides the depreciation of currencies practically throughout that continent, as well as in India, and the difficulty of arranging credits with Australia have all been factors tending to increase the difficulties of carrying on the usual volume of international trade. In Great Britain, where Canada had reason to expect an increase in general business, and particularly in pulp and paper dealings, there has been a most unfortunate upset in general conditions brought about to some degree by the factors just referred to, but precipitated and aggravated by the stoppage of coal mining and the consequent disruption of nearly all manufacturing operations.

The effects of the war are by no means over, and the past six months have seen a great deal of suffering on the part of the working man and enormous losses to manufacturers and merchants. The world generally was pretty well stocked up with high priced materials, the cost of which was principally the result of high wages paid during the war. European countries found that with their depreciated currencies they could undersell the product of labor in foreign countries. The threat of this competition and the rather rapidly increasing supply of labor foretold the necessity of wage reductions. The idea of decreased earnings while the price of commodities remained high brought about a general decrease in purchases, and this very soon was reflected in diminished manufacturing operations and consequent increases in unemployment. Along with this came a restriction of credit and the abandonment of construction work and planned extensions. The curtailing of such operations was also influenced, and is still influenced, by the attempt to maintain wages at war levels.

Conditions have shown marked improvement since last spring, due principally to the recovery of confidence on the part of the public. There is, however, a long way to go. It is quite generally expected that trade will pick up noticeably during the fall. We can all help to bring about the recovery by going on as if we fully expected conditions to continue to improve. It is only by taking such an attitude that conditions will improve. With the return of confidence, and in the anticipation of something akin to prosperity, we may expect money to be more easily available. This will mean that construction programs can be proceeded with and building operations go forward. It is not too late to start building now, and anything like a general resumption along these lines will be like the casting of a stone into a smooth pond of water—the ripples extend to the shores on every side—and activity and employment will increase in all lines of industry. A reduction in wages to a degree dependent upon the ability to sell the product of labor in competition with conditions elsewhere does not mean that it is done for the selfish profit of the manufacturer but may, and should, mean that it is his last step in bringing his business to a condition where he can afford to resume operations and give employment to something like a normal force.

Nobody wants to experience another winter and spring like the seasons just past. There is bound to be some lag in the general recovery of business and consequently considerable unemployment and hardship. All this, however, can be materially alleviated by immediately giving thoughtful consideration to measures for increasing opportunities for labor, and thus starting in motion again the unending cycle by which money earned and spent by each will gradually find its way around the whole circle of business relationships and transactions and come back again to the starting point. Both the manufacturer and user of paper has his part to play in the general scheme of modern business. It is to be greatly hoped that each one will do his part to bring about better conditions during the coming winter by taking careful thought and making careful plans now.

EMBARGO RESOLUTION BACK AGAIN.

It is with no great surprise that we learn that the United States Senate has passed a resolution authorizing the President to open negotiations with Canada so as to bring about, if possible, an arrangement whereby pulpwood may flow unrestricted to the mills across the line. The measure has been sent to the House of Representatives where it will undoubtedly be passed without any great objection. Practically the same bill was passed by the last congress, but failed to become a law because it was not signed by President Wilson. There is hardly any doubt that President Harding will complete the steps necessary to its enactment.

That, however, is but the first step in proceedings. We fail to understand how there can be any hope of ultimate success in such an undertaking. A commission will doubtless be appointed, and they may visit the Provincial and Dominion authorities considerably to their enjoyment, but also at considerable useless expense to the United States Government. The attitude of the Provinces in regard to restrictions on pulpwood cut on crown lands has been plainly and forcefully stated by the authorities on numerous occasions. The tendency is rather to tighten up than loosen up on the regulations. It is a point in human psychology that arguing a matter frequently results in even firmer conviction that one is right in his opinion. That is quite likely to be the case in arguing the matter of pulpwood exportation. The more light that is thrown on the conditions of the forest and the present and future drains on this great natural resource of the Dominion will most certainly result in strengthening the attitude of the Provincial Governments toward careful conservation of Canadian forests. In fact, it will be very surprising if a discussion of this matter does not result in going beyond the restrictions already imposed upon crown land wood and laying an export tax on pulpwood cut from freehold lands.

It is absolutely necessary to Canada's future that the forests be maintained at their highest state of efficiency, and this will require the expenditure of far larger sums in administration and protection than are being spent at the present time. An export tax will be a considerable source on such income. The final argument to our mind against the advisability of reopening the pulpwood discussion at the present time, is the nature of the permanent tariff bill which is now before the Congress of the United States. The provisions of that bill, as predicted in reports, are not likely to put Canadians in a frame of mind where they will be in favor of voluntarily giving any ground whatever in the way of letting down on the regulations with regard to exporting pulpwood.

COBWEBS.

A humble suggestion to the Salons in London: The British paper mills are threatened with extinction because foreign paper is placed on the English market at prices below the domestic cost of production. Since a maximum price was set during the war, why not take the war's effects into consideration and now fix a minimum price that will give the mills a "living wage?"

Imports of woodpulp into the United States for April were only about half the amounts a year ago.

Friend Beck writes on a post card showing a street in Ornskoldsvik, Sweden: There is a large sulphite mill here, with what is said to be the biggest digester in existence—capacity 25 tons, also a couple of revolving digesters. They have 10,000 tons of bleached sulphite stored up and no market—conditions typical of the trade here.

The Broke Hustler says that Arthur Hoyt caught a fish that "ran over 3 feet and weighed over 20 pounds." We don't believe a fish can run.

The Federal Trade Commission says that 4,968 machine hours' lost time in newsprint mills in May, due to "Other reasons," includes 5,030 hours due to labor conditions.!

In our story of the Technical Section trip, we neglected to mention that the official welcome to Grand 'Mere was extended by Mr. F. A. Sabbaton. He expressed at the dinner what everybody had been doing all day for the visitors. On the same occasion, Mr. John Stadler, of the Belgian Industrial Company, intimated that there would be something doing in Shawinigan Falls. He is some prophet; perhaps his altitude gives greater vision.

Exports of newsprint to the United States in April, 1921, were 56,883 tons, only 422 tons less than in April, 1920. The total was 64,783 as against 60,098 a year ago, due to heavier shipments from Germany and Scandinavia.

320 TONS A DAY AT LAURENTIDE.

Mill production at Grand Mere went forward still another notch during May, to the greatest output yet recorded there, when an average of 320 tons of newsprint daily was established on all machines. This exceeds the best previous figure, that for April, by about 12 tons a day. The increase was chiefly to enhanced efficiency on the part of the new machines, numbers eight and nine, which accounted for 100 tons of the the daily production between them. For several days the two big creations turned out nearly their maximum capacity, or at the rate of about 140 tons daily. In April, these machines averaged a total of 100 tons daiy.

The efficiency leadership went to number seven with 90·9 per cent, with number five in second place with 90·3 per cent. Number nine led the new machines with 75.7 per cent, with number eight at 65.9 per cent.

WHO WANTS A PICTURE?

The picture of the group of technical section delegates at Shawinigan Falls is fine. We are advised that copies can be had at one dollar each. Send your greenback to Mr. Dancey, Belgian Industrial Company, Shawinigan Falls, Que. The picture will be reproduced in Pulp and Paper Magazine next week.

Forestry in Sweden—Part I

By EDWARD BECK, Publicity Dept., Canadian Pulp and Paper Association.

Stockholm, Sweden, May 21.—The first impression obtained by a Canadian investigating forestry in Sweden is that the industry here has passed the experimental stage. It is more or less an exact science. It is difficult to conceive of a body of Swedish foresters, for instance, sitting down to discuss seriously some of the, to them, elemental questions concerning methods of conservation and cutting such as still engage forestry minds in other lands. They have passed that stage here. Forestry is a scientific business. They have been at it for centuries. Upon it largely rests the nation's material welfare.

The state and the private interests, furthermore, are not in conflict. There seems to be but little divergence of opinion as to general policies, and certainly no hindrance to proper development, by reluctance to provide the required funds, whether these are drawn from the public exchequer or from private sources.

A Swedish forestry expert, Herr C. A. Agardh, is on record as writing, in 1857, that "It may be said that the position of Sweden as an independent nation and as a civilized country is contingent upon the existence or non-existence of forests," and in 1921, Prof. Gunnar Anderson, with whom I have talked in Stockholm, says, in an introduction to a work on the Natural Resources of Sweden, after considering Sweden's possessions in minerals, water powers and agricultural and other natural possibilities, that "nature has presented Sweden with no source of wealth to be compared with what lies slumbering the depths of the forests." The purpose of this and succeeding articles will be to disclose the manner and the means obtaining in Sweden to utilize to the best advantage this great natural asset and to ensure its permanency as well as to contrast these means and methods with those employed in Canada, where the forest wealth is not less important, if perhaps not at present so greatly appreciated.

Investigating forestry in Stockholm, Sweden's beautiful capital, is naturally confined to visits to Governmental bureaus, talks with departmental officials, an inspection of the very notable school of forestry and its adjacent research laboratory, than which there is probably none better equipped or better conducted. Actual visits to the forests are to follow.

The forest areas of Sweden cover some fifty-five million acres, of which about two-thirds are in private ownership and the rest government owned. The community of interest between the government and the private owners is readily apparent. It manifests itself in close co-operation by both interests for the protection and betterment of existing forests and of provision for their perpetuation. On the surface, at any rate, there is complete harmony. It is true that—"the future of Sweden lies in her forests," and that the State is trying to increase its holdings by the purchase of private forests wherever possible, but there is no general demand for the confiscation, by purchase or otherwise, of the private holdings.

All cutting, whether on private or public lands, is subject to the same strict regulations. Private owners willingly submit to whatever rules are imposed for the general good. The nature and extent of these rules and regulations will be dealt with later.

It is of interest to note that the public forests are not sold or leased to private interests as in Canada. When the Government has pulpwood or other standing timber to dispose of, its foresters go into the forests and mark each individual tree to be cut down with an individual number. These trees may be scattered over a wide area and separated by considerable distances or they may be grouped together, as circumstances dictate. The right to cut the trees thus selected for cutting is then disposed of at public auction to the highest bidder. There is seldom any lack of competition, as most of the pulp and lumber companies are only too anxious to conserve their own resources by buying when they can buy to advantage.

An outstanding feature of the Swedish timber regulations is that immediate profit from the felled timber is never made the chief consideration. Everything is subordinated to the purpose of ensuring a permanent yield of wood. Selection of trees for cutting is made on the basis of improving the remaining forest. The "diameter limit" regulation, as observed by some of the Canadian provinces, under which all trees cut are required not to fall below a certain prescribed minimum trunk measurement, appears to have no place in Swedish forests. Weak and immature trees are first to be taken out in order to give the sturdier ones a better chance for development. If there is any hard and fast rule employed, it would appear to be that no tree capable of increased development is allowed to be cut until it has reached its maximum growth, unless for the purpose, as already stated, of giving a more promising tree a better chance. There is no such thing as indiscriminate cutting. All waste is eliminated. Trees are cut to within three or four inches of the ground. High stumps are unknown. Slash and other debris is never left on the floor of the forest to incite forest fires or serve as a breeding place for wood-destroying insect pests. Swedish lumbermen aim to utilize every waste product from their lumbering operations. Top logs, even down to one or two inches in top diameter, are bundled and strapped with steel wire and floated to the nearest charcoal plant to be converted into charcoal. What waste cannot be utilized is destroyed.

Swedish forests, as a rule, are comprised of about 80 per cent conifers and 20 per cent broad-leaf species. Trees mature under the most favorable conditions in from 75 to 80 years. In some instances, however, they require two or three times as long. Reforestation, which is carried on, on an ever-increasing scale, will be dealt with later.

An important feature in helping to bring about these desirable results is to be found in the fact that the logging in Swedish forests is supervised by the forester. In Canada, in most instances, the forestry and the logging departments are separate and independent institutions. They are frequently antagonistic. The former is usually concerning with scientific forestry and with making the most of the raw material; the latter's principal object is to make as many logs at a low cost as possible. In Sweden the forester is in full charge. He will not permit the sacrifice of the forest even for a temporary benefit of cheap logs. It is a point well worth the consideration of Canadian lumbermen and limit-holders.

TELL OF LOG SHRINKAGE AND TAX ALLOWANCE ON PULP WOOD CUTTINGS.

Shrinkage estimates ranging from 18·6 per cent down to 7·2 per cent are given by various correspondents in reply to the communication of the Woodlands Section of the American Paper and Pulp Association, requesting information on the shrinkage of 12-foot logs when measured by the cord and then cut to 4-foot lengths and remeasured. Following are typical replies, including one which shows an increase:

New York—Averaging 12 to 13 per cent, varying with the size of the timber.

Wisconsin—Shrinkage of 7·2 per cent, increasing with excessive taper.

Maine—Pulpwood logs measured with caliper rule and sawed to 4-foot lengths usually give a small overrun; in other words, they pile up more cords in 4-foot lengths than the caliper rule in the logs gives.

Canada—Shrinkage, peeled logs, 16·5 per cent; shrinkage, peeled logs, 18·6 per cent, the latter reply also giving a waste of 9·35 per cent in short pieces in excess of 12-foot lengths, and 3·6 per cent as the volume of the bark from peeling.

Some equally interesting replies were received in reply to a request from the Woodlands section for opinions on the methods of handling depletion charges on timber land investments, extracts from which are given below:

From New York—"In some cases, land might not have an appreciable value, while in other cases, it certainly would have. For instance, in New York State most of the pulpwood lands, after being lumbered over, could be sold immediately for at least $5 or $6 per acre to the State, but many tracts are being held for future growth, their value for this purpose being considered probably greater than the present selling price· If the tract in question was valuable or would be valuable after the removal of the merchantable pulpwood, the present value of the land should be deducted from the forest capital before charging off the value of the stand of timber."

From Maine—"My understanding of the Government requirements is as follows: Owners must set up capital investment by itemizing all the factors of value in the purchase as follows, making some arbitrary assumptions:

Land—3,000 acres at $1·00 per acre·· ·· ··	$ 3,000·00
Pulpwood—40,000 cords at $1·05·· ·· ·· ··	42,000·00
Softwood sawlogs—1,500 M.B.F. at $2.00 per M.B.F ···· ·· ·· ·· ·· ·· ·· ·· ·· ·· ··	3,000·00
Hardwood—2,000 M.B.F. at 50c..	1,000.00
Other valuable considerations·· ·· ·· ·· ··	1,000·00
Total Set Up value (purchase price)·· ··	$50,000·00

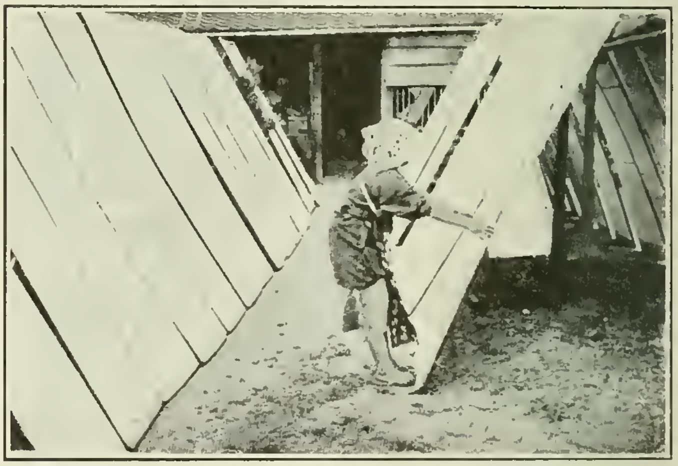
"If the owner then cuts 2,000 cords of pulpwood per year for twenty years he depletes his capital investment at the rate of $2,100·00 per year or a total depletion of $42,000.00· This leaves him, provided he cuts nothing else, with an investment of $8,000. If he then sells, he pays an income tax on anything over $8,000 he receives, or deducts as a loss on his return for the year of the sale the amount under $8,000 he receives. In no case can he completely deplete his $50,000 because he has had the land until he sells it. In my opinion the method the Government requires is the best business method of carrying the account."

From Canada—"Our accounting department thinks it would not be logical to charge off the initial investment on the basis of the forest capital in twenty years, but rather that a sinking fund of $1 per cord should be set aside to replace the timber. The value of the land should, of course, be substracted from the original cost if the land was purchased in fee simple, as the land will still be the property of the purchaser after the timber is cut."

From Wisconsin—"All of the large lumber companies are establishing stumpage values for each class of material and charging it off each year according to the production of each particular class."

From Massachusetts—"The total investment, less a residual value to be determined, divided by the estimated number of units of merchantable timber would give a unit cost per unit. This unit cost multiplied by the number of units removed in any given accounting period would give a total of allowable depreciation for that period. In a typical case, $50,000, minus a residual value which for sake of illustration we may call $10,000, divided by 40,000 cords of merchantable timber, would produce a unit cost of $1 per cord. If the timber is to be removed at the rate of 2,000 cords per year, the yearly depreciation charge would be $2,000 and at the end of twenty years would total $40,000·"

From New York—"My opinion is that the Internal Revenue Department would allow depletion of initial investment only on the basis on which it was bought. I should go on the safe side, so that, in case there was any shortage of the pulpwood, I had charged off enough to take care of the purchase price."



Primitive methods of drying paper on boards in use in Japan.—From Martin's Papyrus.

REGARDING CZECHO-SLOVAKIA.

The following letter is received from Consul B. K. Ryznor, at Montreal.

> Dear Sir,—I have the ronor to inform you that the latest customs tariff amendment concerning the importation of goods from countries with depreciated currency, does not apply to goods imported from Czecho-slovakia since this country has neither a proclaimed nor a standard currency.
>
> The import duty on Czecho-slovak goods imported from Czecho-slovakia, is computed under the previous general tariff and remains the same as before the aforesaid amendment was enforced.

That looks as if there would be no counter-current of trade to speak of.

Grinding Tests of Average Infected and Sound Pulpwood[*]

By JOHN S. BATES.

The mill experiments described in this paper were carried out in May, 1920, at the Jonquiere Mill of Price Brothers & Co. Limited. The main object was to compare the yields of groundwood pulp from average, infected and sound pulpwood. At the same time various measurements of the wood and tests of the pulp were made.

During the week previous to the runs over five cords each of infected wood, sound balsam fir and sound spruce were sorted from the regular supply coming from the block pile. The two-foot blocks had been stored for about a year with some of the bark still on. The selected rotten wood was discolored brown to the extent of perhaps 35 or 40 per cent of the total wood mass, although no particular estimations were made. Some punky blocks were present, but in general the infected portions were still firm. Heart rot was the most common, while sap rot was noticed in some cases where the bark had remained on the blocks. Nearly all the sorted rotten wood proved to be balsam fir, so that true comparison should be with sound balsam fir. The average wood used for comparison was about half balsam fir and half spruce, with perhaps 5 or 10 per cent of the total mass showing signs of infection.

On the day of the tests the sorted piles of special wood went in turn to the knife barkers and from there to the grinder room. The first run was made on regular average pulpwood already in the grinder room. Five cords of rossed wood were ground in each run. These cords were measured in the regular racks, each of which was supposed to represent one-quarter of a cord. Of the twenty racks of wood used in each case about six were specially examined. The two-foot blocks were first counted and then weighed twenty or thirty at a time on a Fairbanks scale. Each block was immersed in water held in a special cylinder to determine the solid volume directly. As less than one-third of the wood was measured in detail, some of the average figures are not very accurate. To obtain an idea of moisture content, blocks were taken at regular intervals from the conveyor and a disc sample of each block was cut by circular saw for oven-drying, although this method of sampling was not as fair as might be desired.

Six grinders were employed and records of the grinding conditions were taken. The pulp was pumped as usual through the bull screen and rotary screens, the tailings being refined in a Jordan. The "regular" pulp of Nos. 1 and 2 grades was weighed in laps from the wet machines, while the screenings were weighed in laps from a separate wet machine. The pulp was sampled throughout for average moisture content in order to

WOOD AND PULP MEASUREMENTS.

	Run No. 1 Average Wood	Run No. 2 Infected Wood	Run No. 3 Sound Balsam	Run No. 4 Sound Spruce	Runs Nos. 3 & 4 Combined
WOOD USED.					
Species, approx. balsam fir, %	50	95	100		50
Species, approx. spruce, %	50	5		100	50
Measured wood, cords	5	5	5	5	10
2-foot blocks per cord	246	212	196	174	185
Estimated average diameter, inches	6	6.5	6.7	7.1	6.9
Solid volume per cord, cu. ft.	90.0	89.0	92.2	87.9	90.0
Wet weight per cord, lbs.	4026	3858	3884	3985	3935
Average moisture, %	47.2	51.9	50.2	41.1	45.6
Oven-dry weight per cord, lbs.	2130	1855	1940	2340	2140
Oven-dry weight per cu. ft., lbs.	23.6	20.8	21.0	26.6	23.8
Oven-dry weight per standard cord of 95 solid cu. ft.	2245	1975	1995	2530	2260
PULP YIELDS.					
Air-dry regular pulp per cord, lbs.	1934	1696			1870
Air-dry screenings per cord, lbs.	221	238			325
Total air-dry pulp per cord, lbs.	2155	1934			2195
Total air-dry pulp per standard cord of 95 solid cu. ft. lbs	2273	2064			2316
Yield of total oven-dry pulp based on over-dry wood by weight, %	91.1	93.9			92.3
Freeness tests at 0.4% and 20° C. Unscreened stock from grinders		196	270	180	
Screened stock to wet machines	87	98	116	91	

GRINDING CONDITIONS.

	Run No. 1 Average Wood	Run No. 2 Infected Wood	Run No. 3 Sound Balsam	Run No. 4 Sound Spruce
Six stones (5 Lombard, 1 Empire) each given one burring during the day.				
Average diameter 45.3 inches.				
Average speed of stones, r. p. m.	240	258	257	256
Average water pressure, lbs. per sq. in.	52	54	53	53
Average temperature of pulp in grinder pits, ° F.	157	160	153	146
Total time of grinding, hours	3	2¼	2½	3½

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[*] This is the second paper on the use of decayed pulpwood. The next will be "Cooking decayed wood by the Soda Process", by E. Sutermeister.

calculate the weights of air-dry pulp (10 per cent moisture). No measurements were made of bull screenings and white water losses. After each run the system was allowed to wash clean, but sufficient time was not allowed after the third run so that the pulp yields from sound balsam fir and sound spruce had to be combined in the calculations.

The quality of pulp in each case was determined by general appearance, microscopic examinations, freeness tests and action on the paper machine. The freeness tests were made in the Green drainage tester at an oven-dry consistency of 0.4 per cent and a temperature of 20 degrees Centigrade. The paper machine trials were carried out on newsprint mixtures containing about 27 per cent of sulphite with the machine running about 575 feet per minute.

Summary of Results.

The results are summarized in the tables and the more important conclusions are discussed below.

The measured cord averaged about 90 cu. ft. of solid wood, with some variations from run to run. Owing to the presence of numerous blocks noticeably under 24 inches in length and considering the rather rough method of estimating cordage in quarter-cord racks, it was considered that the measured cord was lightly smaller than the true cord of 128 cu. ft. Assuming that the normal or "standard" cord of rossed pulpwood is equivalent to 95 cu. ft. of solid wood, the wood and pulp figures calculated to this uniform basis have been added in the tables for comparison with the figures based on cords as measured. In fact, the cord is such a variable and uncertain measure that care has to be taken in interpreting the results of wood tests.

The most significant variations in the wood measurements were the differences in the weights of actual wood per cord and per cubic foot of solid wood. The oven-dry (moisture-free) weight of infected wood per cu. ft. (20.8) was only slightly less than that of sound balsam fir (21.0 lb.) showing that decay had not caused much loss of wood substance. The infected wood weighed about 12 per cent less than average wood (23.6 lbs.). Sound balsam fir was 21 per cent lighter than sound spruce (26.6 lb.), while average wood was about midway between the two.

The yields of groundwood pulp were almost directly in proportion to the weights of actual wood. The air-dry pulp per measured cord was least from infected wood at 1934 lbs. and highest from sound wood at 2195 from average wood, 93.9 per cent from infected wood was about 90 per cent of the yield from average wood, so that the apparent "shrinkage" was 10 per cent. On the other hand the yields of oven-dry pulp based on oven-dry wood were all about the same, 91.1 per cent from average wood, 93.9 per cent from infected wood and 92.3 per cent from sound wood. Although some of the measurements were subject to slight inaccuracies, it may be said in general that the total quantities of pulp varied in direct proportion to the dry weights of wood, with yields of about 92 per cent on the oven-dry weight basis. The infected wood therefore yielded better than was expected.

The grinding conditions were normal and fairly uniform throughout the runs. The time of grinding was a striking factor, the infected wood being ground in 2¼ hours while the sound spruce required 3½ hours.

Quality of pulp was a secondary consideration in the tests but some of the observations were of interest. The pulp from infected wood was decidedly brown in colour, while the spruce pulp was certainly the best in general appearance. Miscroscopic examination showed the infected pulp to be a mixture of coarse fibres with a large amount of fine wood flour, whereas the other pulps were less extreme in variation of fibre sizes. The freeness tests showed little difference in drainage properties between infected and average pulps, but the balsam fir fibres were considerably freer than the rest.

The newsprint paper runs gave practical tests of quality in relation to action of the groundwood pulps on the paper machine. A beater was furnished with spruce groundwood and about 27 per cent of regular sulphite; on the paper machine the stock ran well with no breaks and the paper produced was of good color. Under the same conditions the balsam fir groundwood mixture caused a number of breaks and the stock was rather "soft", although the paper tested almost as well. Infected pulp was mixed with an equal quantity of average groundwood in the beater along with the usual proportion of sulphite. On the paper machine the stock was slow and sticky, and there was considerable difficulty in taking the wet sheet off the couch roll to the presses. There were many breaks and very little finished paper was produced. The paper made tested surprisingly well, but was decidedly brown in color. The quality of infected groundwood is therefore much inferior for papermaking. If rotten wood has to be ground, it appears that the pulp should be mixed in small amounts with the regular supply of groundwood.

As a guide to the storage qualities of the different pulps, some twenty laps from each run were placed in a damp kiln where the conditions were favorable to the growth of fungi and moulds. After six months the laps of infected groundwood were much worse and some were so weak that they fell to pieces on handling. By contact the infected pulp had carried the fungus action into some of the average laps adjoining, and in these cases red rot had seriously affected the regular groundwood. The sound balsam fir and spruce pulps were still in good condition. The results were sufficient to point out the danger of infected groundwood spreading decay through a pile of pulp in storage.

In conclusion the writer wishes to acknowledge the cooperation of Mr. W. Finnegan, Groundwood Superintendent, and all others who assisted in the grinding tests.

CANADIAN MONEY O.K.

A judgment of interest to Canadian business men whose dealings involve the somewhat tangled question of "gold coin" payments has been rendered in connection with a dispute between the Somerville Paper Box Company, London, Ontario, and the American Chicle Company.

By the decision the Canadian concern is successful in an action brought by the American Chicle Company for payment in gold or United States funds of $50,000 due on a mortgage made ten years ago. This mortgage agreement called for payment in "lawful money of Canada or gold" if demanded.

Because of exchange conditions, the United States firm demanded gold in repayment. Orders-in-council in Canada, however, prohibited the export of gold from Canada and authorized banks to meet demands for gold with paper only. The London concern thereupon tendered full payment in Canadian money which the American Chicle Company refused to accept.

The court denided that the Canadian Company was within its rights and the judgment sets forth that payment in Canadian funds satisfies the debt.

A Student Apprentice in a Paper Mill

By A. B. COPPING, Winner of the Essay Contest of
the Technical Section.

(Continued from Page 659)

The outline of stock routing, and control, has been made on the supposition that we can produce uniform stock in the grinder room and here we run against what appears to be, and in truth is, a formidable problem. To begin with, there is always present the animosity of some old timers towards anything that savours of theory or which may add to their duties. Then there are the mechanical difficulties to be encountered and such uncontrollable features as the qualities of stones and wood.

Let us view for a moment the situation. We have a certain type of grinder in good state of repair. Assuming that the wood we get is of good quality, what variable factors can make for good stock? The principal ones are, temperature of grinding, pressure, and condition of the stone.

Lengthy investigations were carried out on the effects on the stock of various temperatures and pressures and it was found that no appreciable difference was made by altering either of these conditions from the average practice of the mill, though automatic recorders for both these factors were deemed highly advisable. The conditioning of the stones was then looked into, and here was found the greatest source of variation. All stones differ in texture and should be treated accordingly. Here becomes apparent the absolute necessity of some form of supervision of the quality of the output, or in other words, the examination of the stock made by each stone in the mill at intervals or at least one hour throughout the twenty-four which comprise each day.

The Blue Grass test already described is one which, with a certain amount of practice on the part of the operator, fills the need and thus at all times the man in charge of the grinding operations knows to quite an accurate degree the condition of the stone by the type of fibre it is producing, and if he sharpens the stones according to the dictates of this test a better and more uniform stock will be produced.

The usual practice of some foremen in sharpening is to do so by instinct—and though any of them will tell you that it is not good to let a stone run more than about eight hours without some attention, several cases of long runs were noted; one being of a stone running as long as forty-two hours without being touched. Such an occurrence would not be possible if a sharpening record were kept and a copy left by each foreman for his successor.

A Definition of Paper-making.

The idea of paper-making in a nutshell is that fibres are put into water and then some of the water is removed through a wire screen, the fibres forming a mat on the wire, the remaining water being removed by pressure and evaporation.

Dyes.

Groundwood in its natural state has a yellowish color—papermakers call it a natural color—and in order to destroy that yellowish tinge and give to the paper at times a pure white, again a blue-white, aniline blue dyes (generally a mixture of Prussian blue and Methyl Violet) are added. The small quantity added has no effect, however, on the formation of a sheet.

Alum.

Again. Alum is added — about .5 per cent by weight. The purpose is primarily to harden the pitches which are especially prevalent when groundwood has been heated too much during the grinding process and which is always present when balsam and jack pine are introduced. (Also to set, or fix, the color, — Editor.)

If pitch is present and alum is not used, the wire becomes clogged by a resinous deposit and there is also this same resinous deposit on the jacket and press felts, and all the suction boxes become filled up with the pitchy mass. Modern practice has taught the paper-maker to remove this objectionable deposit by an extraordinary liberal use of kerosene which extracts the resins.

Alum also tends to give the individual tracheids a somewhat brittle character which indeed helps in the formation of a sheet. It prevents to a degree what the papermaker calls a soft stock, which is difficult to remove from the presses and consequently causes low production.

Foaming.

If too much alum is used there is a tendency for the stock to foam at the flow box and even at times on the wire. Foam also is caused by an abundance of hard pulp mixed with ordinary slush stock, viz:—groundwood pulp that has been subjected to the sun's rays becomes burnt and is hard to beat up. Even though the Jordan is set hard these particles cannot all be removed, and beating against one another cause the foam.

Free and Slow Stock.

Because of the variations in the conditions of the stock, we have the following considerations — in the summertime a papermaker will say that the stock is free because it sheds its water too quickly, i. e., before coming to the suction boxes. The expert papermaker wants water left in the sheet at the suction boxes. In this way he forms his sheet. He will tell you that, due to the temperature difference the stock is slow in the winter time, i. e., it is loath to shed its water, and at times all the water cannot be removed at the suction boxes and the sheet is too soft to be taken off the presses, due to the amount of water present.

In the summer time, in order to bring the water to the suction boxes, the machine tender will advance his apron beyond the slice and lower his slice and build up a high speed behind it. Thus the water shoots out at a much faster rate than before, all the water is not taken out at the table rolls and the water is thus carried to the suction boxes. In the winter time the apron is moved back of the slice, the Fourdrinier is lowered a little, the slice is raised and a lower head is carried back of the slice. Thus the table rolls tend to remove a greater quantity of water because the stock comes on to the wire at a slower rate and a greater depth of film. Another measure employed by the machine tender is to stick a steam pipe in the wire pit to free up the stock. However, no attempt is made at temperaure control.

White Water.

An influencing factor on the freeness and slowness of stock as demonstrated by Fishburn is White Water.

In this matter some work was done during the summer using the Fishburn Tester. A sample each of White Water, Sulphite, Stuff Chest (Box) Slush and Groundwood were obtained and the Sedimentation Time noted as various percentage mixtures of Sulphite and Groundwood, Stuff Chest Slush and White Water were used. The results obtained are tabulated, and an example given on the curves in Fig. 4.

A few years ago most mills had an utter disregard for the re-use of white water and consequently the fibre wastes were enormous. Now, most mills have a haphazard method of white water control but the losses are still enormous.

Shrinkage.

The average papermaker pays very little attention to sewer losses — his one aim is production, and he is inclined to disregard the few old tons of good paper-making material that daily is going out to the river. Weirs are in place at all the outlets of the sewers in the Brompton News Mills and a daily report is made to the Superintendent of the tonnage lost in this way. In addition to this, the individual losses at all the points feeding the main sewers were investigated by placing weirs of a type suitable to the separate cases in the various lines of flow. Thus the total loss per day was analyzed and causes of excessive loss could be readily traced by measuring the flow at these points and comparing the results with those obtained when conditions were normal. The data collected in this manner was found very useful on many occasions when problems dealing with the available white water were dealt with.

Learning the System.

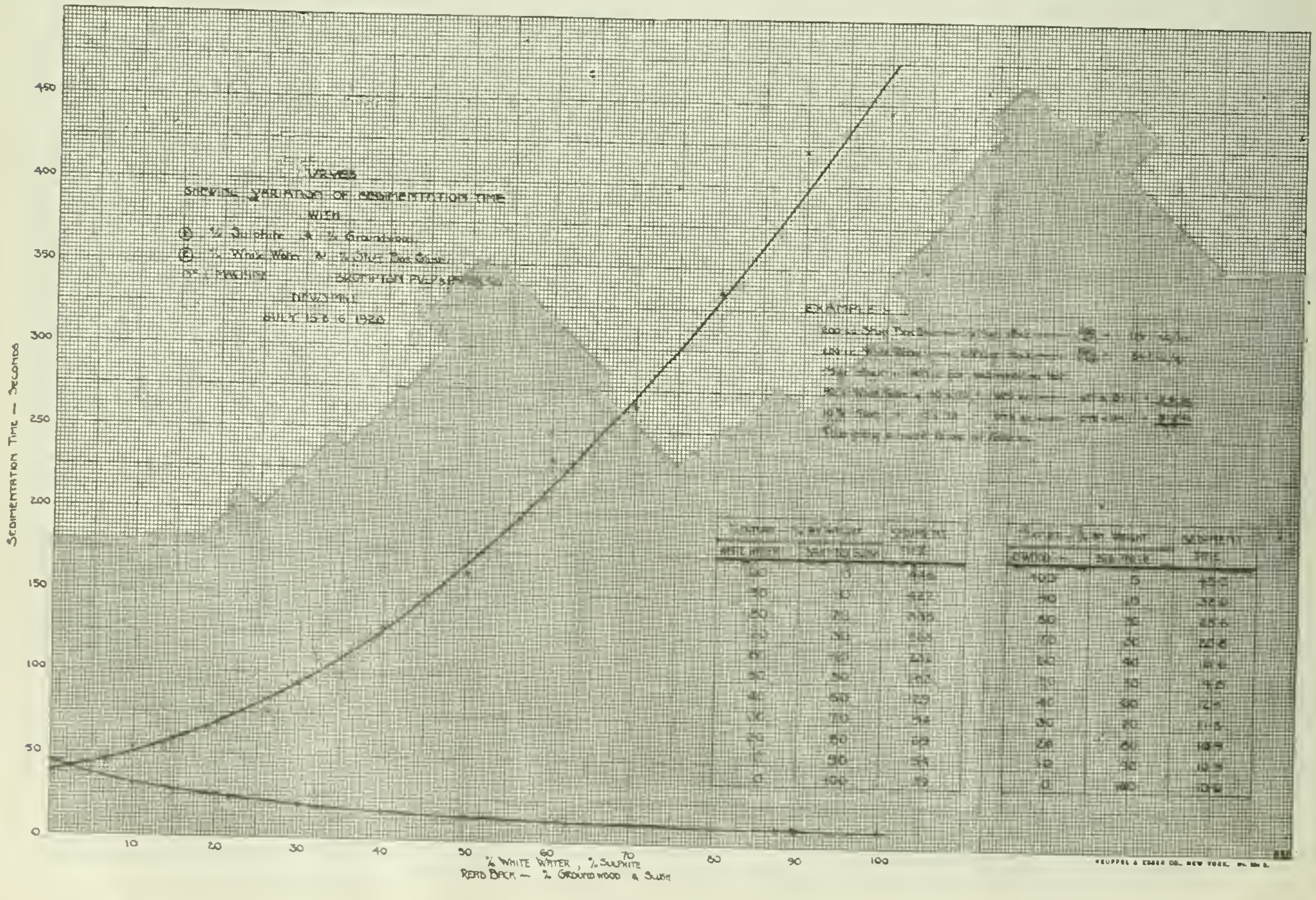
It was realized that, in order to make an intelligent investigation in a mill, those investigating should become thoroughly familiar with the existing conditions and, in our case, with the machine, particularly as regards the flow of the stock. To this end, nearly a month was spent around, over and under the machines. The whole process was watched, and during this time, sketches showing the locations of the more important piping systems were made and colored. These were not done to scale — their purpose being merely to aid in memorizing the system. Three of these are appended to the manuscript (not reproduced here): (1) Stock Routing # 1 Machine. (2) Stock Routing # 2 Machine. (3) White Water System.

As many factors as possible, affecting the running of the machines, were looked into — no definite order being observed, as it was found necessary to co-operate with the work of the groundwood crew.

The following tests, widely varied in character, but all bearing on the mill operation, are quoted as examples of the work done in the news mills.

Efficiency of Save-All.

A Brompton Company type Save-All was found to be working in an unsatisfactory manner and a test of its efficiency was made with the following results: —



24-8-20.

Waste running to Sewer 58.9 cu. ft./Min.
$= 58.9 \times 62.5$
$= 3{,}680$#/Min.
Consistency of Waste $= 0.2485\%$ (bone-dry)

$$\text{Amount Fibre lost} = 3680 \times \frac{.2485}{100}$$

$= 9.125$#/Min.
Savings $= .695$ cu. ft./Min.
$= .695 \times 62.5$
$= 43.4$#/Min.
Consistency of Savings $= 3.53\%$ (bone-dry)

$$\text{Amount Fibre saved} = 43.4 = \frac{3.53}{100}$$

$= 1.53$#/Min.
∴ Total Fibre entering Save-All $= 9.125 + 1.53$
$= 10.655$#/Min.

$$\text{Efficiency} = \frac{1.53}{10.655} = 14.35\%$$

Recommendations were made which corrected the faulty action of the machine.

(To be concluded.)

BUSINESS SITUATION IN THE U.S.

Business, at the beginning of 1921, faced three primary obstacles to the conduct of affairs on anything like a normal plane. Commodity prices were still in many cases grossly inflated. Wages were still on a war basis. The banking position was obviously strained. These obstacles are not to be regarded as entirely overcome, but much progress has been made.

Six months ago it scarcely seemed possible that by this time prices for many raw materials would have reached a point of approximate stabilization; that wage reductions would have been accepted by workers in widely diversified industries in the realization that they were just and necessary, and finally that the banking position as a whole could have improved to the extent indicated by the substantial reduction in the borrowings of reporting member banks at the Federal reserve banks. Such borrowings have declined nearly 40 per cent. from the maximum reached last fall.

Sentiment with respect to business will naturally fluctuate in times like these. The reaction from the spurt in spring business has caused disappointment. The end of the premature revival in the automobile industry and the renewed downward movement in the prices of some commodities, notably sugar and petroleum, have been factors in bringing about a spirit of pessimism which is not entirely justified when the improvement in fundamental conditions is considered.

On the other hand, it is unwise to expect other than quiet business during the summer months. Satisfactory recovery can come only after a protracted period, during which price liquidation must be completed as to manufactured and semi-finished goods and confidence in the future restored. Closely connected, too, with domestic business is the state of trade abroad and especially in Europe where political considerations must be a powerful influence in shaping the future. But in this direction also encouragement may be found in the fixing of a definite schedule of reparations payments as well as the now plainly discernible determination of most of the peoples of Europe to resume productive enterprise as rapidly as possible.—Bulletin National Bank of Commerce in New York.

GARDEN CITY PAPER MILLS COMPANY, LTD.

By A. R. R. JONES.

Pretty nearly ideal locations are those of the two plants of the Garden City Paper Mills Company, Ltd., situated at St. Catharines, Ont. and Merritton, Ont., respectively. They possess the great advantages of abundance of power, contiguity to large consuming and manufacturing centres and a favorable situation generally in respect of efficiency combined with economy in paper manufacturing.

At its No. 1 plant at St. Catharine's the Company manufactures extensive lines of various grades of paper. These include toilet paper, tissue, fruit wraps, manifold waxing papers, strong lightweight wrappings, lightweight carbonizing papers and various other lightweight specialties. A highly popular line turned out from this plant is that of folded towels. This folded towel is known as "The Northern" and it is used extensively not only in lavatories, bath-rooms, etc., but also very widely in garages, both public and private.

This No. 1 plant is situated on Lock Seven, Old Welland Canal, at which point the Company owns a first-rate water power. The machinery installed, which includes an 84 inch Harper Fourdrinier, is all of the most modern and efficient kind. This, together with the admirable arrangement of the mill, has resulted in making the plant a model of which a modern tissue and toilet paper mill ought to be.

The No. 2 plant, which is at Merritton, is the "Converting Plant," and here is produced a range of lightweight wax papers—a department which is in process of development on a largely increased scale.

The capacity of the two plants is for 3,500 tons per year. Both plants are working full all the time—a highly gratifying state of affairs, at the present time, and one which is, no doubt, largely attributable to the satisfaction given by the Company's products. The shipping facilities are excellent. Under the progressive management which characterizes the Company's operations, and which makes it a prime factor of policy to maintain unimpaired the highest standard of quality in its output, the Company's products enjoy a high reputation not only in Canada but in many other countries as well.

Mr. Lauren H. Gardner is president and general manager of the Company; Mr. R. E. Myers, vice-president; Mr. Charles V. Syrett, secretary-treasurer; and the other directors are Messrs. H. J. Severance and Leo. E. Charles.

PULP AND PAPER IN SWEDEN.

In the wood pulp market there is no noticeable change. A number of Swedish pulp mills have now decided to follow the example of their Norwegian colleagues, to suspend production or to restrict it to a fraction of the former output in anticipation of a rising market in the course of the summer, when these measures will have had time to make their effects felt.

As far as paper is concerned, there is still a lively demand, especially for news, with the result that stocks are about to be emptied; but owing to the large supply so far, prices remain low. This fact in conjunction with the strike is checking the operations of the Norwegian mill owners, who are taking up an attitude of extreme caution, as they are disinclined to commit themselves to operations on a somewhat larger scale. —C. E. SONTUM, in T. & C. Weekly Bulletin.

ASSOCIATION FOOTBALL AT THREE RIVERS.

A splendid contested game was that which took place at Three Rivers between the Wayagamack Pulp and Paper Co. Football Club and the Tidewater Shipyard Club, Wayagamack running out winners by 5-0. Ewen kicked off for Wayagamack before a large and enthusiastic crowd. Wayagamack scoring through Thompson after 5 minutes of play. Tidewater took up running after but met a rock-like defence in Hamilton and Ormrod, Wayagamack came back again and Carlin handling the ball in the penalty area Cameron scored from the penalty kick the second goal for Wayagamack. Tidewater made desperate attempts to reduce the lead but without success, half-time arriving with the score 2-0 in favor of Wayagamack.

The second half opened up with Wayagamack having advantage of the wind and soon made tracks for the Tidewater goal and it was easily seen that the Wayagamack forwards would make trouble for the Tidewater defence. Cameron playing a star game at out-side left, Hunter, Stewart and Ewen scored this half and Wayagamack run out easy winners by 5 to 0.

For the winners the whole team played well and executed some pretty passing movements, Tidewater apparently tired the second half but their defence never gave up.

A pleasing feature was the large crowd that turned out to see the game, this is the first year of the League since the war, and shows the game is still very popular.

Baseball in the St. Maurice Valley moves apace. On the 19th the Grand'Mere team beat the International Mill by a score of 18 to 1 and put Grand'Mere on a par with the Three Rivers team for first place in the league.

Mr. William Whyte is on his way to Japan in the interests of Ayers Limited and Niagara Wire Weaving Company.

Mr. Charles R. Van de Carr, Jr., superintendent of the Laurentide paper mill, who has been in poor health for some time, was operated on for appendicitis at the Royal Victoria Hospital, Montreal, and at the present time is improving rapidly.

Chief Emile Berthiaume, Police and Fire Dept's., Three Rivers.

QUEBEC MAKES MOST OF CANADA'S GROUNDWOOD.

In the year 1920, a total of 827,982 cords of pulpwood were produced in Quebec, having a value of $10,163,515. In the finished manufacture, Quebec consumed 1,085,278 cords of the raw material, leading all the other provinces by a wide margin. An average of 2,078 pounds of pulp per cord was secured throughout the year, the average maintained in the sulphite process was 1,042 pounds per cord, and in the sulphate process, 1,145 pounds. The actual output of groundwood pulp was 493,520 tons, or 79·50 per cent of the Dominion capacity. The province of Quebec produces more than forty per cent of the Dominion's finished pulp.

The extensive supplies of raw material, the province's wealth of water powers in proximity to the forests, the excellent transportation facilities of all kinds with adequate shipping facilities, have all contributed to make the pulp and paper industry so important in Quebec, whilst the provincial embargo on the export of pulpwood cut on Crown lands in a raw, unmanufactured state has compelled manufacture in the province with the establishment of mills, and so built up a purely Canadian industry of prime importance. Activity is not confined to one or more localities, but its sphere is as broad as Quebec's woods are extensive, touching into every corner of the province.

The rapid expansion of the industry in Quebec can be judged from the extensions which the year 1920 witnessed. At Chandler, the Saguenay Company increased their output from 80 to 130 tons per day. At Grand Mere, the Laurentide Company installed two new newsprint machines, giving a total daily capacity of about 350 tons of newsprint and 60 tons of boards. At Quebec, the Hammermill Paper Company established itself. At Clarke City, the Imperial Paper Mills and the Amalgamated Press took over a plant and enlarged its output. The Howard Smith Company brought their output up to 100 tons per day. Price Brothers, by adding a new machine, increased their newsprint output to 300 tons a day. Construction of the International Company will increase output to 200 tons of pulp and the same amount of paper. The Brompton Company has nearly completed a new groundwood mill of 100 tons daily capacity and, in addition, has secured new tracts containing 1,000,000 cords of pulpwood. The Belgo-Canadian made important additions to their plant, and increased output. The Wayagamack Company brought their production up to 115 tons of kraft per day, and added 2,000 square miles to their timber limits.

Outlook for 1921.

What 1921 will bring to the industry is foreshadowed in anticipated developments. The Three Rivers Pulp and Paper Company, incorporated last year with a capital of $4,000,000, will commence activities this year. The International Paper Company's plant at Three Rivers is nearing completion, and will have a daily capacity of 200 tons of pulp and 200 tons of paper. Price Brothers, Limited, also have a new development at Saguenay, Quebec.

The province of Quebec, both through its Government and the large corporations operating plants in the province, is following a sane policy of forestation, having wisely profited by the experience of older countries. Quebec is treating her forests not as mines of inexhaustible resources, but as crops to be resown after harvest.—C.P.R. Bulletin.

British Trade News

(From OUR LONDON CORRESPONDENT.)

London, June 11, 1921.

This is the centenary year of Bertrams, Ltd., Sciennes Engineering Works, Edinburgh, the well-known papermakers' engineers, and the historical event is being celebrated in true Scottish style. The other day the workers enjoyed a pleasant trip through Highland scenery and Mr. Milne, the managing Director, told them that, in addition to defraying the expenses of the outing, the Firm had decided, in honor of the occasion, to pay the employees a day's wage. Needless to say, the news was received with much joy and the chairman of the workers' committee returned thanks, pointing out that such an action showed the good relations that existed between employers and employees in the works, particularly at a time like the present when the country was afflicted with so much regrettable unrest.

The Fight to Protect Paper.

The fight to get paper included in the Safeguarding of Industries Bill, now before the House of Commons, is still going on and the Bill is, step by step, gradually becoming law—the measure not yet receiving any setback from opposition sources. To refresh Canadian memories I must state that there are two camps in existence at present, viz. those who do not want paper included in the Bill and those who do. In other words the consumers are on one side and the producers on the other, the latter contending that they simply want to be protected against countries with debased rates of exchange such as Finland, Germany, and one or two other foreign producing centres, who were underselling the British product. Newsprint was one of the chief topics. The consumers, who include some of the newspaper owners, say if newsprint and other papers are included their cost of production will go up considerably and they want open competition to keep the British price down to a reasonable level. Today British newsprint is 5½ cents a lb. for contracts and foreign 5 cents, so we are gradually getting down near pre-war rates. The papermakers contend they are not afraid of open competition, but they cannot compete against countries whose finances are in a state of chaos. Here is part of their case why they should come under the Bill, which advocates 33 1/3 per cent duty on articles imported and produced below the cost of a British article:—

Delivery Period: Foreign mills—three to 10 weeks, subject to "force majeure" and other uncertainties, restrictions and obstacles. British mills—Definite delivery date, usually within a week from date of order.

Convenience: Foreign mills—Large stocks of all sizes used have to be carried to guard against shortage due to uncertain delivery period. This involves heavy rent, interest and insurance on inactive sizes. British Mills—No dead stock, sizes actually required are delivered as and when required.

Economy: Foreign Mills—Interest on advance payments; Rent and Insurance on stocks carried; Extra haulage to and from store; Damage in transit from frequent handlings and injury to edges of sheets and reels cause great losses of time on presses. Time is money; overtime is double money. British Mills—Actual saving £2 to £3 15s. per ton; Deliver in good condition and you pay 5 or 6 weeks after you have the paper ready for use.

That is the case put forward today by the British papermakers.

The Newsprint Consumers Case.

The consumers say it is quite clear that paper can be included in the Bill if the articles are sold (a) at prices below the cost of production or (b) at prices which by reason of depreciation in value in relation to sterling of the currency of the country in which the goods are manufactured, are below the prices at which similar goods can be profitably manufactured in the United Kingdom. This is one point admitted in favor of the papermakers. The consumers then ask: "Who is to decide where the paper has been produced, if imported, what was the cost of production, what was the state of the currency at the time of production, and the cost of similar paper 'profitably manufactured' in the United Kingdom?" To put a question like this to the intelligence of papermakers shows what little knowledge the consumers have of the paper industry existing in their own country and it is such people the producers are up against. Then they ask: "Who is to find out with any accuracy the cost of production of paper in Finland, Sweden, and Norway; would it not require separate Commissions? They forget the information is in London and that for the past 50 years British papermakers are competing with foreign made paper, scientifically and otherwise, and that what is not known in the British Mills is not worth knowing. The papermaker has not been like the consumer of newsprint—thirty years behind the times; he has gone on shrewdly with research work and studied the markets and the foreign producers and his results have not been acclaimed from the housetops. No doubt there is great activity on the part of consumers to keep the market open for fair and unfair competition; but then it must be remembered that a paper industry employing over 53,000 workers—and more than half of them idle at the moment—must be protected in some degree from debased rates of exchange and it is only this protection British producers ask. There is no other country in the world that woul stand the policy that is going on in England today and it is for Canada's benefit also that the Bill should be passed. The consumers, therefore, have not made out their case yet. They only complain that their paper will cost them more and they have not yet proved where the extra cost will come in—they have only passed resolutions up and down the country asking Parliament not to put paper in the Bill and they have utterly failed to understand and interpret the present economic and international position as a whole.

The "Newspaper World" (the mouthpiece of the newspapers) asks: "How can anybody decide judicially under (b) that Swedish paper manufactured from Swedish pulp by the aid of Swedish water power, was improperly sold in this country at a price lower than paper made in this country from similar Swedish pulp?" The paper adds that the problem is too deep for the simple mind.

It is subjects like this the British papermaker has to contend with. One would think there was no Papermakers Association (or Customs) in existence.

Coal Miners Strike May Soon End.

Since I started writing these notes a ray of sunshine has suddenly appeared in the industrial darkness overhanging the paper industry. The coal miners and mine owners have been in consultation, as a result of which a ballot is to be again taken on the questions of resuming work at a reduced wage or remain out on strike in order to press for better terms. Conferences have been held up and down the country and it remains to be seen now how the rank and file of the miners will take things. The outlook at the moment looks hopeful. The engineering trades are now threatening to cease work. The men in the industry, however, are not so wicked in demanding what they think are their rights as the miners are and a round table conference may sooth matters for the time being.

Wages Trouble Brewing in Paper Industry.

I have come to the conclusion that a big strike is like a contageous disease—it spreads to all classes. The workers in the British paper mills are now unsettled. As I pointed out some time ago the scheme of fixing wages according to the rise and fall in the cost of living is the root of all the evil. Men who were earning £5 a week 18 months ago cannot understand why they should drop down to £4 and £3—as the cost of living falls—and consequently they will stand out for the £5 or strike for it. This is only an illustration I give, as the fall in wages is not so great as from £5 to £3. But in the case of the paper workers the employers say that during the past 12 months the cost of living has gone down, trade is bad, some mills are closed, and there must be a cut in the wages sheet. Now the workers say the reduction in their wages is too large and if they will not accept it they expect to be locked out. Negotiations are taking place and possibly some way will be seen out of the difficulty. The open door for conferences and negotiating is a great policy in industrial disputes and no doubt wise heads will be called in.

"To reduce my money, means that I cannot live and keep my wife and four children," said a paper worker to me the other day. "It is true living has gone down slightly," he added, "but it was done in this way: they reduced sugar per lb. and what my family gained on that reduction had to be paid out on vegetables. Before the war you never heard of anyone buying vegetables by the lb., except certain classes, but now everything is sold by the lb. Money speaks and I know what it costs to live now and what it did 12 months ago. I am out for no reduction in my wages." This is the spirit of obstinancy the employers are up against.

Pulp and Paper Situation.

In the paper market wholesalers, merchants, agents, as well as the manufacturers, are going through a period of exceptional dullness, and unemployment in the mills is very high. Producers are hoping that when the miners get their difficulties settled there will be a nice revival in trade. The cardboard, strawboard, and other similar lines have received a rude shock by the cotton workers strike and business is at a standstill.

There is no life in pulp market as yet. Some good shipments, on contract, are arriving from Canada. Prices are about as follows:—

Bleached Sulphite, £35; Easy Bleaching £26; Sulphite, newsprint quality, £23; Unbleached Soda £25; Soda Kraft, £22; Groundwood, moist, £7 (dry, £14) per ton.

THE FIRST PULP MILL IN ALASKA.

The Alaska Pulp and Paper Company has erected a pulp mill of two four-pocket grinders in Snettisham Arm, in the Tongass National Forest, near Juneau. Power is derived from Tease Lake, a short distance back from shore, and consists of a flume and pipe line direct to a Pelton wheel on the same shaft with the grinders. About 2,000 horsepower are secured. Construction began last May, and the first run of pulp came off the wet machine on January 24th. It is not the plan of the company to manufacture paper at this time, but merely to demonstrate the feasibility of the manufacture of pulp in Alaska. For the present, the pulp will be shipped to the states for manufacturing into paper, and later a paper mill may be erected.

The forest service has made an initial sale of 100,000,000 feet of spruce and hemlock timber to the company. This timber is in several tracts close to the mill, and will be sufficient to meet their requirements until such time as they can increase their capacity.

A general view of the plant is shown above.

—Courtesy News Print Service Bureau.

Technical Section

REVIEW OF RECENT LITERATURE.

A-16; R-13. Committee on Mechanical Standards. The committee reports the results of its investigations of acid-resisting bronze, antimonial lead, and bearing metals. With regard to acid-resisting bronze all castings must be free from flaws, dross, porous spots, and the furnaces free from scale, sand or loam. An increase in lead above 5 per cent does not fulfill any useful purpose; the strength and toughness rapidly decrease while the acid resisting qualities are not materially affected. Any effect of this constituent is probably due to the fact that a high percentage of lead makes it difficult to obtain a sound casting, with the result that acid eats its way into the interior of the casting, quickly disintegrating it. The addition of tin, up to 20 per cent, gives an alloy possessing great strength and hardness. An alloy containing over 10 per cent of tin has a very complex freezing point curve; between 10 and 20 percent, there being no less than three distinct freezing points. This means that such an alloy solidifies in three separate portions, thus accelerating the tendeny to segregations with the consequent decrease in strength and ductility. The presence of phosphorus in the bronze, up to 0.1 percent, has a very marked effect on its properties, greatly increasing its strength and toughness and also notably facilitating the founding. It is recommended that in any specification for bronze the presence of not less than 0.05 percent phosphorus should be insisted on. The suggested specifications for acid resisting bronze are as follows: copper, 84.5 to 85 percent; tin 9.5 to 10.5 percent; lead, 4.5 to 5.5 per cent; phosphorus, not less than 0.05 percent; impurities, not more than 0.5 percent. A few acid resisting metals sold under trade names were also examined. "Meco" and "Aterite" contained chiefly copper, nickel, and zinc, with a small addition of lead, iron and silicon. They have a satisfactory tensile strength (about 40,000 lb.), the hardness of 25 to 30 points (Shore scale). They are both affected to some degree by moist SO_2-gas, but appear to possess notable acid-resisting qualities. Their present market price does not allow them to compete with the copper-tin-lead alloys. "Promet Branze" (a copper-zinc alloy) is very strong and tough, but owing to its high zinc content is hardly suitable for sulphite mill work.

As antimonial lead is used principally for lead piping, the composition to be used will be determined principally by the physical requirements of such piping, which are that it does not collapse under its own weight, and that it does not creep, sag or bend under exposure to the pressure and temperature of the digester gases. On the other hand, it should not be brittle. The alloy containing 10 to 11 percent of antimony best fills these conditions. Below 10 percent of antimony the tensile and compressive strengths of the alloy decrease rapidly and while more plactic it is very soft. By an addition of more than 11 percent antimony no advantage is gained, as above this percentage the alloy rapidly becomes brittle. It is furthermore extremely difficult to obtain homogeneous castings with antimony present in proportions above this percentage. Good foundry practice is necessary in order to obtain a homogeneous alloy, and it is recommended that the necessary chemical and physical tests be included in the specification for antimonial lead.

The investigation of bearing metal was confined to white metals alloys and consisting in an investigation of the physical characteristics of two babbits which seem to be extensively used by some of the pulp and paper mills, and of three metals (sold under trade names and not on an analysis basis) thought to be of considerable interest. The compositions of the metals investigated are tabulated, together with their hardness (Shore scale), tensile and compressive strengths, and also their relative cost based on the present market prices of the metals of which they are composed. The results are briefly discussed, attention being particularly drawn to "Frary metal", which consists essentially of lead containing small amounts of calcium and barium, and which showed up very well under some tests to which it was subjected by the U. S. Bureau of Standards.—Abstract of report in Pulp and Paper, Jan. 20, 1921.

A-15. Pulp Evaluation as Affected by the Fiber Ratio in the Test Sheets. C. L. BACHELDER, **Paper,** xxvii, 11 (Nov. 17, 1920). The method of determining the strength of pulp as actually carried out has a number of objectionable features, such as a personal equation, a machine direction to the fibers, and an uneven sheet. An even sheet is defined as "one having for every fiber running in one direction an equal number of fibers running at right angles to the first." Such a sheet may be called a 100 per cent sheet and should test the same in all directions. But in the preparation of hand sheets, this is not obtained, and fiber direction is not eliminated. In the method generally used the pulp to be tested is beaten in an experimental beater or ball mill and then made into hand sheets. The sheets are then tested for strength, usually by the "pop" test. In this method it is important that the pulp be always prepared in a uniform manner. The consistence of the stock and the number of passes of the mould in the vat depend on the required thickness of the sheet. The manipulation of the mould in the vat has some influence on the formation of the sheet, but in most cases the formation is not as good as on the machine. A manipulation which gives excellent results is as follows: the mould was sunk to the bottom of the vat, and after the stock had been stirred thoroughly but carefully in order to eliminate any currents which might affect the formation of the sheets, and after time had been allowed for the violent agitation to cease, the mould was raised vertically. It is recommended to make hand sheets on a suction mould. It requires no great skill or training to operate the apparatus, and a number of samples can be turned out in a short time. The inaccuracies arising from personal equation, machine direction, and uneven sheets are reduced to a minimum; the only apparent cause of error is in stirring the stock and causing it to circulate in currents. The experiments described led to the following conclusions: (1) The fiber direction is the controlling factor in strength tests. (2) Before a sheet can be called uniform the fibers must be uniformly

(Continued on page 598).

UNITED STATES NOTES

Figures announced by the Federal Trade Commission show that production of newsprint was considerably less in May than in the corresponding month a year ago. The total output for the month is given at 78,868 net tons, compared with 129,230 tons a year ago. Shipments during the month amounted to 82,776 tons, against 128,080 tons in May, 1920. Stocks on hand at the end of the month were 31,198 tons, an increase as compared with 22,823 tons a year ago. Standard news production is reported as 73,181 tons, against 118,906 tons, shipments at 75,806 tons, against 118,832 tons, and stocks on hand at 26,956 tons, compared with 20,159 tons in the same month of the previous year.

Oscar Gumbinsky, of Oscar Gumbinsky & Bros., the big Western paper stock concern, succeeds the late Frank H. Millman as president of the Eddy Paper Company, Three Rivers and White Pigeon, Mich. Mr. Gumbinsky has been associated with the manegement of the Eddy Paper Company since its founding on a smal scale in 1906, and his shrewd handling of part of its affairs contributed no little toward the growth of its business so that the concern is now one of the largest paper manufacturing establishments in Michigan. Mr. Gumbinsky is regarded as one of the keenest paper mill executives in America, and he has a natural aptitude for financial and organization work. Another change in the Eddy Company management affects the position of general manager which has been tendered to A. B. Thomas, former general manager of the MacSimBar Paper Company, Otsego. Mr. Thomas takes the place of Charles E. Nelson, who resigned recently. Mr. Nelson, it is understood, will enter the sales department, taking charge of sales and distribution in the Chicago territory. Alfred Plummer, widely known in the Middle West's boxboard field, has been appointed general sales manager.

Joseph C. Sibley, of Franklin, Pa., a former resident of Florida, has written an interesting letter to the press in which he seeks to have the attention of the American publishers and of the Government authorities directed to the possibilities for producing pulp for paper making from the scrub palmetto. Mr. Sibley believes that once this problem is practically solved, Florida can supply the paper needs of all America from her abundant growth of the palmetto. Another correspondent, E. J. Whitehead, of Westfield, N.J., in endorsing Mr. Sibley's suggestion, points out that the palmetto reproduces so rapidly that the fields it covers can be cut over year in and year out.

A preliminary statement of the Forest Service of the United States, co-operating with the Bureau of the Census and New York State in a census of timber cut for wood-using industries, shows that New York State cut 411,000,000 feet in 1920 valued at $20,000,000, or nearly double the value of the 1918 cut. Hemlock retains first place in quantity, closely followed by maple. Both hemlock and spruce lumber were less in quantity than in 1919, the decrease in spruce being probably due to the demands of the pulp mills for this species.

Negotiations aiming at a settlement of the strike in the score or more of large paper mills whch have been tied up since May 1, and in some cases since May 11, are again being carried on between representatives of the paper workers and the manufacturers. Both sides incline to the view that terms for ending the strike will be agreed upon within a very short time. It is believed that the International Paper Company is prepared to effect a compromise on the matter of wages. The management is demanding a cut of 30 per cent, while the workers are insisting on a raise of 10 per cent. The result of the conference now going on may be a reduction of 20 per cent. Several other companies have already terminated strikes in their plants on this basis. According to a recent statement by the company their wage cost per ton of paper is $22.88, with the wage scale now in force. On this basis a thirty per cent reduction would mean a saving of $6.86 a ton; 20 per cent reduction would mean a saving of $4.58 a ton. The company recently cut its newsprint price $15 a ton for contracts on the quarter commencing July 1, or from $110 to $95 a ton.

Washington B. Venderlip, who has been in Siberia for the Russia Development Syndicate, arrived in New York last week, announcing among other things that he has a concession to 10,000,000 acres of spruce timber land on the Murmansk coast, which, if properly worked, will reduce the price of newsprint paper from 50 to 75 per cent. He described the tract as a submerged forest. One reason why it would so greatly reduce print paper costs, he said, is that pulp made from it on the ground will provide cargoes for vessels returning to the United States from nearby ports. It will be necessary for the United States to enter into a trade agreement with Russia before the concession can be fully utilized. (Working submerged timber sounds "fishy" to us.—Ed.)

Addressing the annual convention of the Southern Newspaper Publisher's Association last week, E. W. Barrett, editor of the Birmingham (Ala.) Age-Herald, said that the mountains and foothills of the South have an inexhaustible supply of spruce pine, from which satisfactory newsprint can be manufactured much cheaper than from Northern wood. He exhibited copies of his publication printed on paper made from spruce pine cut on Yellow Creek, near Warrior River, Ala. Experts are said to have declared this paper—made from wood shipped to Northern mills—the equal in every respect of the newsprint made from Canadian spruce.

A particularly interesting bit of assistance to owners of pulp wood land was given by the American Paper and Pulp Association when O. M. Porter, Assistant Secretary of the Association, was loaned as a technical forester to make a rough preliminary reconnaissance of some valuable timber lands in northwestern Maine. His brief survey showed that the land contained considerably more value in standing timber than had been supposed, and he advised in reporting on the conditions, that a forester be engaged to handle the property, after making a complete and accurate survey of the entire tract.

PULP AND PAPER NEWS

The strike of Toronto printers, pressmen and bookbinders is now broken, so far as the bookbinders are concerned. Large numbers of the latter have applied for their old jobs, but, while many have been taken on again by the firms with which they were employed prior to the occurrence of the strike, quite a considerable number have found that their old jobs are filled, and so they go to swell the ranks of the workless. The officials of the striking printing unions declare that the defection of the bookbinders will not have any serious effect upon their membership. But it is obvious that it can scarcely contribute to the strike's prospects of success.

Reference has been made, before now, in these columns to the very general resentment at the Toronto strikers' demands displayed by business and commercial men in the city who are either unconnected or else very remotely connected with the printing industry. In such quarters, the men's demands are generally regarded as preposterous. It is, perhaps, the demand for increased wages which comes in for most denunciation on the ground that it has been made at a moment when economic conditions require that production costs be lowered. At the same time, if there are any Toronto manufacturers, or chief executives of manufacturing concerns, who regard the idea of a forty-four hour working week with favor, the present writer, who has discussed the matter with scores of them, has not come across any. In a general way, the line taken is that a forty-four hour working week is not much more than sufficient to keep a man in health. Even those who reluctantly concede that, in some industries, the work may be of so arduous a nature that forty-four hours at it in any one week are possibly as much as a man can put in with full benefit to his employer and with full credit to himself, are among the foremost to deny that by any stretch of imagination, the work of a printer can be numbered among those arduous industries. They say that it "does not take it out of a man" to the same extent as many other callings where a forty-four hour working week is not in vogue. Thus, from commercial and business circles generally, the employing printers are being admonished to stand firm in their resistance to the men's demands. That, by the way, is just what they look like doing.

Highly successful was the annual convention of the Canadian Paper Box Manufacturers' Association which was held, last week, in the Royal Connaught Hotel, Hamilton, Ont. The atmosphere of optimism respecting future conditions pervaded the whole of the proceedings. In the course of an excellent paper, Mr. Walter Trum, president of the Metropolitan Paper Box Manufacturers' Association, of New York, predicted that the worst of the slump was over and that all that was now needed to ensure a satisfactory trade revival was aggressive salesmanship and loyalty on the part of the manufacturers to their customers. The same spirit of optimism inspired the various papers read by delegates relating chiefly to the trade. Mr. Charles T. Reid presided, and Controller Calvin Davis welcomed the convention on behalf of the city of Hamilton.

Speaking of this convention, special mention should be made of the talk given, by request, by Mr. A. L. Dawe, secretary of the Canadian Pulp and Paper Association. The talk centred mainly around the possibilities of extending the use of packages and boxes throughout Canada. This is a subject to which Mr. Dawe has devoted considerable thought and attention. It is to be hoped that his talk which was very interesting and instructive, and was highly appreciated will be fruitful of results in the requisite direction.

Representatives of the Boston banking firms interested in the financing of the Riordon Company,Ltd., arrived in Montreal last week and stayed in the city over the week-end. The firms with representatives among the visitors were Harris, Forbes and Co., E. H. Rollins and Sons and Parkinson and Burr. The visitors conferred with the management of the Riordon Company.

Information regarding the recent operation of two of the principal paper companies is of a highly favorable character. The Laurentide Company had a record output in May, while sales of the Brompton Pulp and Paper Company have increased each succeeding month, from $540,000 in January to $1,050,000 in May.

The Toronto Women's Press Club will issue in the late Autumn a small book of verse. All the contributors to the book will be members of the Club.

In the cup competition, Shawinigan beat Laurentide by 1 to 0 in a hard fought football game on the 18th. This gives Shawinigan the right to play Wayagamack in the final to be played on July 9th.

The new transformers at East Angus will be ready to be cut over on July 1st. They will receive current at high voltage from Shawinigan Falls and step it down to a working pressure of 2,200 volts. This installation was required in connection with the new groundwood mill. The new boiler house for the Brompton sulphate mill is now in full operation and running smoothly. All the machinery for the new groundwood mill is in place and it is expected that operations will commence about the middle of July.

Mr. George Chahoon, Jr. was prevented from attending the dinner at Laurentide Inn in honor of the visit of the Technical Section as he was on his way back from Quebec where he met Mrs. Chahoon and daughters Miss Mary Elizabeth, and Miss Margaret on their return from England and the Continent.

Mr. William McE. Bowden, head of the Laurentide Logging Division, who was badly shaken up in the recent hydroplane "crash," is now able to walk some distance without great effort and is able to go out of doors for short periods. His progress, while somewhat slow, is steady. Captain W. R. Maxwell, the injured pilot, is back at his duties at the air station.

The company 'planes have been doing photographic work since the forest fires in this vicinity have been extinguished. Previously the thick smoke pall obscured most of the country and made photographic work impossible.

(Continued from page 595)

distributed. (3) Such a condition cannot be obtained when the hand mould is manipulated as under the present method. (4) The suction mould does eliminate many of the undesirable factors, and the result is a sheet more nearly perfect than can be made by any of the other methods described. Fiber direction in the sheet was studied in the following manner. To 23lb. of furnish of 50 per cent bleached aspen soda and 50 per cent spruce sulphite was added 0.165lb. of the same furnish which had been colored blue. After this was well mixed in the beater, it was dumped into the stock chest; part was then run over the machine in a regular machine run, and part was drawn off from the chest to be made up later into hands sheets. A granite sheet was obtained, the blue fibers of which were easily distinguished with the aid of an eyeglass.—A. P.-C.

A-0. Polysaccharides. I. The methylation of starch. P. KARRER. **Helvetic Chimica Acta.** III, 5 (1920); **Paper,** xxvii, 11 (Nov. 17, 1920). Theory of the constitution of the polysaccharides such as dextrin, starch, and cellulose. The starch grain and the cellulose fiber are considered as being "crystalloids" in which certain directive forces are still present and which arrange the molecules according to a definite law into crystal-like compounds. A starch crystalloid may be caused to form a colloidal solution by pulverizing, soaking, etc., but the dissolved particles always consist of many molecules. True solutions may be obtained from the starch by preparing such derivatives as are naturally soluble in water or other solvents. The solubility of this derivative is the cause of the "depolymerization" which follows solution—or better say the destruction of the crystalloid. The preparation of the methyl derivatives of starch is taken to prove the above theory.—A. P.-C.

E-2. Fusel Oil from Sulphite Alcohol. RUDOLF SIEBER. **Woch. Papierfabr.,** li, 35 (Sept. 4, 1920). Brief discussion of the composition of the fusel oil obtained by the distillation of sulphite alcohol. The yield of fusel oil is always much less from sulphite alcohol than from bewery alcohol, owing to the very small amount of nitrogenous material in the sulphite mash; but the principal constituents are always alcohol of the amyl and hexyl series. It also contains an appreciable amount of borneol, which is most probably derived from the resinous portion of the wood. —A. P.-C.

E-2. Methyl Alcohol from Lignin. EMIL HEUSER and HANZ SCHMELZ. **Cellulose Chemie.** 1, 6 (Oct. 22, 1920; **Paper,** xxvii, 11 (Nov. 17, 1920). Translation by CLARENCE J. WEST. See **Pulp and Paper,** xix, 138 (Feb. 3, 1921).—A. P.-C.

F-1. A Rapid Method of Control Analysis of Sulphate Liquor. C. K. BERGMAN, **Finsk Pappers-Och Travarutidskrift** (Nov. 15, 1920), **Pulp and Paper,** xix, 11-2 (Jan. 6. 1921). Sulphate liquors contain Na_2CO_3, $NaOH$, Na_2S, and small quantities of sulphite and silicate of soda, which can generally be neglected. An alkalimetric titration with methyl orange as indicator gives:

I. $Na_2CO_3 + NaOH + Na_2S$

while with phenolphthalein as indicator we have

II. $\frac{1}{2}Na_2CO_3 + NaOH + \frac{1}{2}Na_2S$

An iodometric titration gives

III. Na_2S.

And an alkalimetric titration with phenolphthalein as indicator, after addition of an excess of barium chloride to precipitate the carbonates, gives

IV. $NaOH + \frac{1}{2}Na_2S$

If **a, b, c, d,** are the volumes of standard solutions required for the titrations I, II, IV, and III, respectively, we have from I, II, IV:—$Na_2CO_3 = 2(b—c)$; $NaOH = 2b—a$; $Na_2S = 2(a—2b + c)$.

From I, II, and III we get:—$Na_2Co_3 = 2(a—b)—d$; $NaOH = 2b—a$; $Na_2S = d$.

From I, III, and IV, we get: $Na_2CO_3 = a — c — \frac{1}{2}d$; $NaOH = c — \frac{1}{2}d$; $Na_2S = d$.

The presence of silicate and of sulphite of soda introduces an error; but a correction can be applied by determining these separately by one of the known methods. The use of I, II, and IV has the advantage of requiring but one standard solution. Most of the mills merely determine the "causticity", i.e. 1006-a.—A. P.- C.

F-0; K-17. Book Paper from Southern Pines and Gums. SYDNEY D. WELLS, **Paper,** xxvii, 12 (Nov. 24, 1920). See **Pulp and Paper,** xviii, 1286 (Dec. 16, 1920).—A. P.-C.

K-10. Rosin and Rosin Sizing. E. SUTERMEISTER. **Paper,** xxvii, 13 (Dec. 1, 1920). A study on the sizing efficiency of different grades of rosin. From the results obtained and from observations made during the tests described in the paper, the following points are brought out: (1) It appears that the sizing value of the rosin increases in passing from the darker to the lighter grades, though the difference in favor of the lighter grades is hardly enough to justify any great difference in price. (2) The sheets as made for these tests were not calendered and in comparing them for color no difference could be detected in those sized with W.W. and with D rosin. With calendered sheets where more rosin is used this might not hold true, but it is believed that any difference in color would not be serious enough to prevent the use of the lower grades provided the dirt could be sufficiently reduced. (3) The separation of rosin which occurs when the size emulsion stands three or four days does not seem to have any harmful effect on its sizing quality, nor does the clear emulsion from the mill have a much greater sizing power than the milky and opaque emulsions from the laboratory-made size.—A. P.-C.

K-18. Paper Box Board Manufacture. JOSEPH S. SLATER. **Paper,** xxvii, 14, (Dec. 8, 1920).. A general review of the great saving in wood effected by the paper board industry which utilizes to a very large extent fibrous waste material, of some of the many uses to which paper board is being put, of the advisability of the mills making their product directly into containers, of the merits and demerits of various methods of defibering the waste paper, of recent advances in the methods of drying (Sturtevant system), with a brief mention of various mechanical features of the board mills.—A. P.-C.

K-23. Blotting and Filter Papers. G. SCHUMANN. **Papier Markt** (Jan. 1, 1921); **Pulp and Paper** xix, 131 (Feb. 3, 1921). Blotting and filter papers must be made from raw materials having porous, open structure. The chief ones used are wool and cotton fibers, and aspen soda pulp. The most satisfactory is cotton, while aspen soda is used in the manufacture of inferior grades of blotting papers. The desired properties can be developed and improved in three ways: (1) fermentation or maceration (2) Refrigeration (3) grinding in a hollander with sharp knives. Cylinder machines are generally used, rather than fourdriniers, and the drying should approximate air drying as far as possible.

The manufacture of filter paper requires the use of especially pure water, supplemented by washing with hydrochloric or hydrofluoric acid to eliminate all mineral matters. Aspen pulp can be used for inferior grades of blotting papers, but must be mixed with a stronger fiber. Bleached beech pulps yield exceptionally soft and porous half-stuff; but the wood must be carefully sorted before cooking on account of the frequent presence of resinous and waxy bodies.—A. P.-C.

L-7. Paper Textiles. W. F. SCHAPHORST (Copyright, 1920). **Paper**, xxvii, 13 (Dec. 1, 1929). Brief review of the various methods of making textiles from paper and pulp in Germany and in Scandinavia during the war and of the probability of these paper textiles competing with the exportation of cheaper clothing from the United States.—A. P.-C.

O-3; P-0. Pure Drinking Water for Industrial Plants. ARTHUR W. BUSWELL, **Paper**, xxvii, 13 (Dec. 12, 1920). In 1915 the Supreme Court of Wisconsin rendered a decision that the furnishing of a contamined drinking water supply as an "Accident" within the meaning of the Workmen's Compensation Act, and in consequence a large corporation in the Middle West recently paid $60,000 in settlement of suits for damages filed on account of sickness and death of employees resulting from contaminated drinking water furnished in its factory.—A. P.-C.

P-5. Accident Records in the Paper Mill. R. H. GUERRANT, **Paper**, xxvii, 11 (Nov. 17, 1920). Proper accident statistics help to determine the causes of accidents and enable the concentration of efforts toward remedying the conditions responsible for accidents. A satisfactory method for keeping accident records should comprise at least five essential points: (1) See that injured men report promptly; (2) Make a good record of every man reporting for treatment; (3) Notify the proper departments; (4) Get all the information for the accident report; (5) Notify the departments when the man is able to resume his work. The statistics thus obtained serve to show the causes of accidents, the extent of the disabilities, and the frequency and severity rates so that the comparisons may be established between different mills in the same industry, or even between the different industries. The frequency rate is defined as the number of lost time accidents which occur for each million hours worked, and the severity rate as the number of days lost per one thousand hours work.—A. P.-C.

R-1. Ontario Pulp and Paper Industry. W. L. EDWARDS. **Paper, xxvii, 11 (Nov. 17, 1920).** Historical sketch of the development of the industry in Ontario since it was founded in 1825 until the present day, with an outline of the improvements and developments projected for the coming year (1921).—A. P.-C.

R-1. The Paper Mills of the Pacific Coast Region. Paper, xxvii, 12 (Nov. 24, 1920). Brief enumeration of the pulp and paper mills of the Pacific coast in Canada and the United States.—A. P.-C.

R-1. Wilmington and the Chemical Industry..Chem. Met. Eng., xxiii, 1083-5 (Dec. 1, 1920). Abstracts of papers read at the Nov. 19, 1920, meeting of the American Chemical Society giving outlines of the various chemically controlled industries (exclusive of explosives) in the vicinity of Wilmington, including finishing of cotton goods, manufacture of glazed kid leather, lithophone, vulcanized fiber and papermaking.—A.P.-C.

R-2. New Cellulose Periodicals. Paper, xxvii, 11 (Nov. 17, 1920). **Cellulose-Chemie. Wissenschaft Beiblätter zu der Zeitschrift "Der Papierfabrikant".** Issued as a supplement to **Papierfabrikant**, edited by EMIL HEUSER, Darmstadt. **Zelstoffchemische Abhandlungen.** Published monthly by CARL HOFMANN, Berlin, SW 11, Germany, edited by CARL G. SCHWALBE.—A. P.-C.

R-2. Committee on Abstracts and Publications. Arrangements have been made for abstracting the British paper trade journals, while attempts are being made at a similar arrangement for Scandinavian journals. Cooperation with the American committee is being continued.—A. P-C.

R-5. Canada's Pulp and Paper Industry in 1920. A. L. DAWE, secretary, and EDWARD BECK, of the Canadian Pulp and Paper Association. **Pulp and Paper**, xix, 33-5 (Jan. 13, 1921). Compiled from the annual review numbers of the Montreal **Gazette** and the Toronto **Globe.** General review of conditions in the industry, of the reorganization of a number of the older companies, of the organization of new ones, and of the developments and improvements which are proposed for 1921.—A. P.-C.

R-5. Paper in Argentina. World's Paper Trade Review, Jan. 7, 1921, lxxv, 9, p. 16.—Argentina is still importing the finer grades of paper from the United States by the high rate of exchange has resulted in placing many orders in Germany and Sweden where prices and deliveries are more favorable. Most of the printed wall papers however are being imported from England, prices and deliveries being far better than in the United States and Canada.—A. C.

R-7. Superintendent is the Keystone of the Industry. M. G. ARGY, **Pulp and Paper**, xix, 54-5 (Jan. 20, 1921). Address of the temporary chairman at the organization meeting of the "Eastern Section of the Canadian Division of the American Pulp and Paper Mill Superintendents' Association", giving a brief outline of the organization of the Canadian Division showing the great advantage to be derived both by the industrial members and by the pulp and paper industry as a whole from the Association, and typifying the superintendent as "the keystone of the arch of industry", as he is the connecting link between Capital and Labor.—A. P.-C.

R-11. The University and Industry. General Sir ARTHUR CURRIE, K.C.M.G., **Pulp and Paper**, xix, 95-7 (Jan. 27, 1921); **Paper**, xxvii, 23 (Feb. 9, 1921). Address at the luncheon of the Canadian Pulp and Paper Association, Montreal, January 21, 1921.—A. P.-C.

R-13. Annual Meeting of the Pulp and Paper Association. Montreal, Jan. 21, 1921.— **Pulp and Paper**, xix, 99-108 (Jan. 27, 1921); **Paper**, xxvii, 22 (Feb. 22, 1921), 23 (Feb. 9, 1921). Texts of the address of GEORGE CHAHOON, Jr., retiring president, in which are reviewed the outstanding events affecting the association, and the reports of the chairman of the newsprint, mechanical, pulp, book and writing, board, woodlands, coated paper, felt paper, wrapping paper, and technical, sections and of the transportation department.—A. P.-C.

R-13. The Forest Products Laboratory (U.S.A.) and the Paper Manufacturer. OTTO KRESS, Paper, xxvii, 13 (Dec. 1, 1920). Brief description of the work being done for the pulp and paper industry at the Forest Products Laboratory, Madison, Wis.—A. P.-C.

The Markets

CANADIAN TRADE CONDITIONS.

Toronto, 25th June.—The strike among the printers in Toronto, which it was indicated, last week, shows every prospect of being a protracted one, so far as the arriving at a settlement by agreement is concerned, still continues to exercise a depressing effect on most departments of the industry. The book-binders have given in and gone back to work—those of them who can get it. Local 91 of the International Typographical Union, last Friday, made public an offer it made to the Toronto employing printers, which their organization (the Toronto Typothetae) rejected on Wednesday in last week. The offer was to the effect that the men would return to work with the understanding that the forty-four hour week prevail, that $35.20 be the minimum wage, and that shop practices and working conditions as understood in the old agreement be maintained. The offer also provided that if a satisfactory wage scale could not be mutually agreed on, an arbitration board should be appointed to determine the wage question between $35.20 and $40, and that the contract should be for a year from the 1st June, 1921. Probably the employing printers did not take long in deciding to reject this offer—indeed their rejection of it caused little surprise among the striking printers. For it is now fairly clear that, if there is to be a settlement by agreement at all, it will be on terms very different from those just summarized as constituting the offer made on behalf of the men. But, though there may not be any settlement by agreement, there are plenty of keen observers who think that the strike will "peter out"—in fact, that it is already "petering out." According to Mr. W. A. Sutherland, secretary of the employers' organization, fifty per cent of the positions of the pressmen have been filled, and there are 227 compositors at work in shops of the Typothetae. Further, firms sympathetic with the Typothetae are said to be witholding work until the latter organization gets its own way over the matters in dispute. On the other hand, the strikers express themselves as being still confident of victory. But, however, the dispute may end, there can be no question that its continuance is having a very detrimental effect on most departments of the paper industry—and this, too, at a time when, for various other reasons, trade is abnormally quiet in so many branches of it. Altogether, as regard trade conditions, as compared with those reported on last week, it is pretty much a case of "As you were!" At outside points, it may be added, business is somewhat better than in Toronto itself.

Pulp.—"If anything," observed to the writer the representative of one of the big pulp mills, "there has recently been some improvement in the demand for pulp. But it is not of a kind to inspire much optimism. Business is still very far from normal. Stocks in the hands both of the mills and jobbers are still being reduced far too slowly."

Book Paper.—The only buying of any account that is taking place in the book market, and that of bonds and ledgers, is just for immediate requirements. Stocks are being kept down to the minimum. No further reductions have taken place, on the whole, in these and other standard lines. But there is a certain want of fixity of price.

Waste Papers.—Business is still stagnant in the cheaper grades of waste papers. But a little business is being done in the better lines of the white shavings.

Wrapping Paper.—The business doing by the jobbers is reported as being very light. Prices have undergone no alteration.

Toilets and Tissues.—The trade in these papers is reported as continuing to be good. There has been no alteration in prices.

Manufactured Stationery.—On the whole, the demand is still away below what it ought to be, but yet many manufacturers are continuing to do a fair amount of business—though always on the light side.

Box Board.—In this market again, buyers are buying only for immediate requirements. No big orders are coming along. Prices remain unaltered.

Greaseproof and Glassine.—There is little business doing in these lines, and there have been no recent changes in price.

NEW YORK MARKETS.

New York, June 25.—(Special Correspondence)—Conditions in the paper market continue very much the same as previously reported and there have been no developments of note this week. Demand is still limited, consumers and jobbers alike confining their buying to supplies immediately and actually needed, and yet activity along certain lines appears to be broadening with the general situation, as expressed by a prominent member of the trade in New York, "looking upward rather than downward."

It is not altogether surprising that demand is no more active at present than it is, as this is the time when paper consumers as well as paper manufacturers and jobbers are compiling mid-year inventory, which naturally places a check on business. Most of the shipments made from mills to other than contract customers at present are from stock, and paper manufacturers are trying to reduce their stocks of both finished and raw product to as great an extent as possible, which has a quieting effect on manufacturing operations. There is a common belief in the trade that as soon as the inventory-taking season is over demand for most kinds of paper will pick up, while some traders are of the opinion that a good many paper users will come into the market to cover the bulk of their fall requirements early, thus stimulating business to an appreciable extent.

Conferences held in New York last week by officials of the International Paper Company and delegates of the papermakers' union with a view to coming to some agreement on the wage dispute failed of success, and the strike situation at newsprint mills remains unchanged. It was hoped that a settlement would be reached on the points at issue, but after conferring on Thursday, Friday and Saturday, the conference broke up and the mill workers' representatives departed for home Saturday night. It is now problematical which side will make the next move toward patching up the matter. That newsprint mills are

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seriously affected by the strike of operatives can be seen in the report of the Federal Trade Commission covering the print paper industry for May which shows that last month production of newsprint by United States mills dropped to 78,868 net tons, a decline of 36,540 tons, or roughly about 40 per cent, from the output of the same mills in April. It is obvious that with production at this low point it will not take very long for available stocks of print paper to be liquidated, and unless the strike is settled and mills resume operation, there is every likelihood of a dire shortage of print paper arising.

The tone of the spot newsprint market is steady and most of the sales made to transient buyers are at 5 cents a pound at mills or better. Here and there reports are received of a sale at less than 5 cents, but it is doubtful that sizable lots can be obtained at such figures, and indications are that supplies offered at the low levels represent distress holdings which sellers are willing to accept anything for in order to move. No further change has been announced in the contract basis, and there is not likely to be while present conditions obtain in the industry where consumption is running considerably in excess of the production.

Book paper mills are moderately busy on contract orders from publishers but fresh demand is slow in developing. There is no alteration in quotations on book papers. Wrappings are moving in routine fashion and mainly in small quantities at former price levels, No. 1 domestic kraft bringing between 6·50 and 7 cents per pound f.o.b. mills. Tissues are quotably steady at around 95 cents basis on No. 1 white tissue, and coarse tissues are meeting with a steadily improving demand.

Box boards are firming in price though they are still to be used at recently prevailing quotations. Some manufacturers are holding for $35 a ton on plain chip board, yet purchases have been recorded this week at $32·50 and even $30 in some few cases, while filled news board is available at $35 to $37·50 per ton at mills. Paper box makers are far from deluged with orders for their product but they are getting more business than for some time and are not hesitating to buy board when needing it, with the result the general complexion of the market is changing for the better.

There is nothing of importance to report in fine papers. Demand at best is narrow, and the buying being done is against direct wants, while quotations are on a broad range—so broad, in fact, that it is difficult to say what constitute actual market price levels.

GROUND WOOD—Mechanical wood pulp holds quotably steady at around $30 a ton f.o.b. grinding plants for spruce ground wood of prime quality for prompt shipment, and the market has developed no new turn of apparent importance. Board mills are buying in spasmodic style and on the whole are absorbing a fair volume of pulp, and there is also some demand from manila, tissue and newsprint mills, but in spite of authoritative reports that current production is considerable under normal owing to the strike of mill workers, unfavorable water conditions, and the like, buyers do not seem to experience difficulty in locating all the supply desired. There is a feeling that unless the strike of mill operatives is settled, ground wood may become very scarce later in the summer, but this is having no material influence on prices at the moment.

CHEMICAL PULP—The tone of the chemical wood pulp market is at best easy, and there is little show of important activity in any corner of the trade. Consumers are coming into view as buyers only when in immediate need of supplies, and even then are searching the market for pulp at the cheapest prices, which obviously has a softening effect on values. It is a hard matter to name accurate prices. Reports have been heard of domestic bleached sulphite selling at as low as 5 cents a pound and of domestic easy bleaching being offered at less than 3·75 cents and No. 1 domestic kraft at 3 cents. Probably small lots can be obtained at these low figures but the probabilities are higher prices would have to be paid for sizable tonnage. News grade sulphite is about the firmest grade in the market and producers are mostly demanding at least 3·50 cents a pound at pulp mills for this description of sulphite. Thehe is practically no trading in imported pulp and prices are mainly nominal.

RAGS—The outstanding development in the rag market is the slowing up of demand for roofing stock. Those mills which earlier in the month were quite active buyers are now mostly ignoring offerings, with the result prices on roofing rags have come down slightly, dealers now being willing to sell No. 1 satinets at 80 to 85 cents a hundred pounds at shipping points and No 2 packing at 70 to 75 cents. The remainder of the market rules exceedingly quiet. New cuttings are little wanted by paper mills and are available with the exception of several grades like unbleached muslins and white lawns, at lower prices than those asked by dealers. Old rags are moving slowly. Writing paper manufacturers are buying few old whites or thirds and blues, and prices are irregular and easy. No. 1 repacked whites are offered at 5·25 cents a pound f.o.b. New York, No. 2 repacked at 3·25 cents, repacked blues at

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PAPER STOCK—Some grades of old paper hold steady in price and are moving toward consuming plants in fairly good volume; others are scarcely wanted by mills and are tending lower in value. Old kraft paper still leads in demand and dealers are asking 2.10 to 2.15 cents a pound at shipping points for No. 1 packing. Soft white shavings have firmed up somewhat and are held at 2.25 cents as a minimum, with some packers asking a quarter of a cent higher. No. 1 mixed paper is sought in a little larger quantity by board mills and is bringing 30 to 32½ cents per hundred f.o.b. New York. Folded newspapers on the other hand, are in slow demand and are readily available at 37½ cents New York. Flat stock is a trifle down in price, No. 1 old books and magazines being offered at 90 cents a hundred, and mixed books at 70 cents.

OLD ROPE AND BAGGING—Old manila rope is quotably steady at 4 cents per pound f.o.b. New York, and although mills have stopped buying to an extent, there is a fair movement on back orders and the market appears to be fairly well cleaned up on supplies. Old bagging has not improved its market position and rules exceedingly dull, with No. 1 scrap bagging offered at $1 per hundred pounds, roofing bagging at 60 cents and No. 1 gunny at $1·25 cents.

NEWSPRINT PAPER REVIEW FOR MAY, 1921.

The effect of the strike on the production of newsprint in the United States is shown by the following extract from the report of the Federal Trade Commission:

	Number of Mills.	Production.	Stocks on hand end of month.
		Net tons.	
Total Newsprint—			
May, 1921	87	78,868	31,198
May, 1920	92	129,230	22,833
May, 1919	70	105,819	27,084
May, 1918	66	111,242	26,122
Total (5 mos.) 1921	—	528,678	31,198
Total (5 mos.) 1920	—	629,244	22,823
Total (5 mos.) 1919	—	556,245	27,084
Total (5 mos.) 1918	—	527,626	26,122
Standard News—			
May, 1921	69	73,181	26,955

Note.—Above figures for total newsprint do not include hanging paper.

The average production of total newsprint and standard news, based upon the total combined production for the years 1918, 1919 and 1920, amounted to 113,925 tons of total newsprint and 10,650 tons of standard news, for a period corresponding to May. The actual production amounted to 78,868 tons of total newsprint and 73,181 tons of standard news, which for total newsprint was 30 per cent below the average for the three-year period and for standard news about 28 per cent below the average.

The production of newsprint for May, 1921, compared with May, 1920, shows a decrease, amounting to 39 per cent for total newsprint and about 39 per cent for standard news.

The production for May, 1921, compared with May, 1919, shows a decrease of 25 per cent for total newsprint and a decrease of 24 per cent for standard news.

The decrease of production for May, 1921, over May, 1918, amounted to 29 per cent for total newsprint and 22 per cent for standard news.

Mill stocks of both total newsprint and standard news decreased during May, 1921.

Stocks of rolls in the hands of jobbers at the end of May were 156 tons less than the stocks in the hands of the same jobbers at the beginning of the month. Stocks of sheets were 419 tons less at the end of May than at the beginning of the month. The net decrease in the total stocks of newsprint in the hands of jobbers at the end of May amounted to 575 tons.

Commitments to sell roll news were 3,884 tons greater than commitments to buy. Commitments to sell sheet news, were 722 tons less than commitments to buy. Total commitments to sell both rolls and sheets were 3,162 tons greater than commitments to buy.

Publishers' stocks decreased 20,613 tons during the month. The average daily tonnage used during May was 38 tons less than the average used in April.

Seventy-eight publishing concerns held about 72 per cent of the tonnage on hand at the end of the month.

Publishers' stocks and transit tonnage on May 31st represented slightly less than 45 days' supply at the existing rate of consumption.

The domestic consumption of standard news, by metropolitan dailies using between one-half and three-fourths of a million tons annually, for May, 1921, when compared with May, 1920, shows that the consumption for the month of May, 1921, was practically the same as for May, 1920, and increased slightly less than 8 per cent for May, 1921, over May, 1919.

The imports of newsprint for April, 1921, were 4,685 tons more than for April, 1920. The exports for April, 1921, were 1,789 tons less than for April, 1920.

The imports of groundwood pulp for April, 1921, were 3,729 tons less than for April, 1920. The exports of domestic wood pulp were 751 tons less than for April, 1920.

Average Prices Paid by Publishers.

The weighted average price of contract deliveries from domestic mills to publishers during May, 1921, f.o.b. mill, in carload lots, for standard news in rolls was $5.248 per 100 pounds. This weighted average is based upon May deliveries of about 39,000 tons on contract involving a total tonnage of approximately 600,000 tons of undelivered paper manufactured in the United States.

The weighted average contract prices based on deliveries from Canadian mills of about 21,000 tons of standard roll news in carload lots, f.o.b. mill, in May, 1921, was $5.497 per 100 pounds. This weighted average is based upon the May deliveries on contracts involving about 270,000 tons of undelivered Canadian paper.

The weighted average market price for May of standard roll news in carload lots f.o.b. mill, based upon domestic purchases totaling about 7,000 tons was $5.056 per 100 pounds.

He who has conferred a kindness should be silent, he who has received one should speak of it.—Seneca.

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